

Prehistoric Relics

COMPILED BY WARREN K. MOOREHEAD

PUBLISHED AT ANDOVER, MASS.
BY · THE · ANDOVER · PRESS

PREHISTORIC RELICS

AN ILLUSTRATED CATALOGUE DESCRIBING
SOME EIGHT HUNDRED AND FIFTY
DIFFERENT SPECIMENS

Compiled from the Standard Authorities in
Archaeology. One Hundred and Forty-six Figures

BY MAIL, POST-PAID, ONE DOLLAR

PUBLISHED BY
THE ANDOVER PRESS
ANDOVER, MASS.

Table of Contents

| Chapter | | Page |
|---------|--|------|
| I. | The Collecting and Arranging of Specimens. . | 5 |
| II. | Division of Implements. | 9 |
| III. | Large Chipped Implements. | 16 |
| IV. | Division III. Stemmed. | 25 |
| V. | Peculiar Forms and Drills. | 31 |
| VI. | Flint Knives. | 41 |
| VII. | Manufacture of Flint Implements. | 45 |
| VIII. | Grooved Stone Axes. | 49 |
| IX. | Polished Stone Hatchets, or Celts. | 62 |
| X. | Pestles, Mortars, Mauls and Hammers. | 69 |
| XI. | Slate Ornaments and Ceremonials. | 78 |
| XII. | Ceremonials; continued. | 84 |
| XIII. | Shell and Bone Ornaments and Implements. | 92 |
| XIV. | Bicaves and Plummets. | 101 |
| XV. | Pipes. | 110 |
| XVI. | Pottery. | 125 |
| XVII. | Hematites and Copper. | 136 |
| XVIII. | Unclassified and Unique Forms. | 149 |

Preface

Nearly all of the 7500 collectors of archaeological specimens have at some time or other wished for an inexpensive, and yet complete, illustrated catalogue. Books we have had in numbers, but they are all expensive, or they cover explorations only. Therefore, there are objections to most of them.

Recognizing the call for a collector's book — one that should be for laymen and not for experts — we have compiled the present book, *Prehistoric Relics*. It will be observed that we have quoted largely from standard authorities. In footnotes we have referred to more than one hundred books, pamphlets and articles upon archaeologic subjects; and students, therefore, will have no trouble in pursuing further reading.

Prehistoric Relics is prepared solely for collectors and beginners in Archaeology. It is not intended for museums or professionals.

THE ANDOVER PRESS,
ANDOVER, MASS.

April 20th, 1905.



Digitized by the Internet Archive
in 2013

Chapter I

The Collecting and Arranging of Specimens

It has been truthfully said that of all the sciences there is not one which appeals to the popular mind, or is of greater interest to the general public than Archaeology. An individual may dabble in it to the extent of making a collection for his own amusement ; he may take the various publications, visit the museums, join the societies and thus become more or less of a scientific archaeologist ; he is beset by no intricate nomenclature, he is not compelled to follow in certain prescribed channels. So it is that there are upwards of ten thousand persons engaged in this fascinating study.

The layman can best become interested in the ancient Americans by making a collection of their peculiar relics. If he lives in the city, he labors under more difficulties than his fellow collector of the village. He must resort to purchase or he may indulge in the pleasure of excursions to localities where specimens are to be found. He may experience more trouble and is certainly at greater expense than his rural contemporary, but in the end he may possess a better exhibit, for the city man, as a rule, has more means at his disposal.

Let us outline for instance, what a man living in a small town may do. Suppose he can spare two half-days per week during the collecting season — April to November. He must first collect from his own neighborhood. If he has had no experience he would do well to read current archaeologic literature. From farmers and storekeepers he can ascertain who has a collection and if it is for sale, or upon what fields there were village sites. His leisure hours would be profitably spent in walking over these camp or village sites.

By the quantity of broken stone, and its extent, pottery, flint chip-pings, etc., he would know the large or small sites. He would learn to search after a heavy rain — especially when rain fell upon freshly plowed fields. Rough and rude types would constitute the main portion of his finds ; yet of great value to himself because they were personal finds.

The man who purchases all his specimens, and who collects solely for the pleasure he derives in possessing beautiful implements, has a valuable cabinet in that its contents represent the highest art attained by aborigines. But such a collection is not of real archaeologic value. It should contain *all* the types whether of fine or poor workmanship. In such an assortment the student will take more satisfaction and, moreover, he cannot be classed as a “crank” simply gathering unique and unheard of types without regard to their real meaning, age or genuineness.

Display of Specimens

As to a cabinet. A spool case, or one or two shelves in a book case will do for the first few months. When the collection becomes crowded in its space a special cabinet is necessary. The only difference between the average book case and a case fit for the display of archaeologic material lies in this : the shelf supports should be stronger, the shelves nearer together (say six to seven inches) and slanting slightly towards the front. Heavy objects should be placed on the lower shelf, tall ones and pottery at the top and the small or flat specimens on the middle shelves. The relics should be labeled or numbered and entered in a book catalogue. Canton flannel (or thin cotton strips) is sufficiently rough to prevent ornaments, flint implements or other small artifacts from slipping. They can be placed in rows, circles or other artistic groups according to the fancy of the collector. When not sewed on cardboard the specimens may be more conveniently handled ; but there is some danger of breakage. Light objects on a dark background, or dark objects on a light background will bring out the details of workmanship into strong relief. Whole pottery should be arranged on top (outside) and protected by three or four wires strung along in front. The finer, or more delicate whole pottery may be placed on one of the shelves.

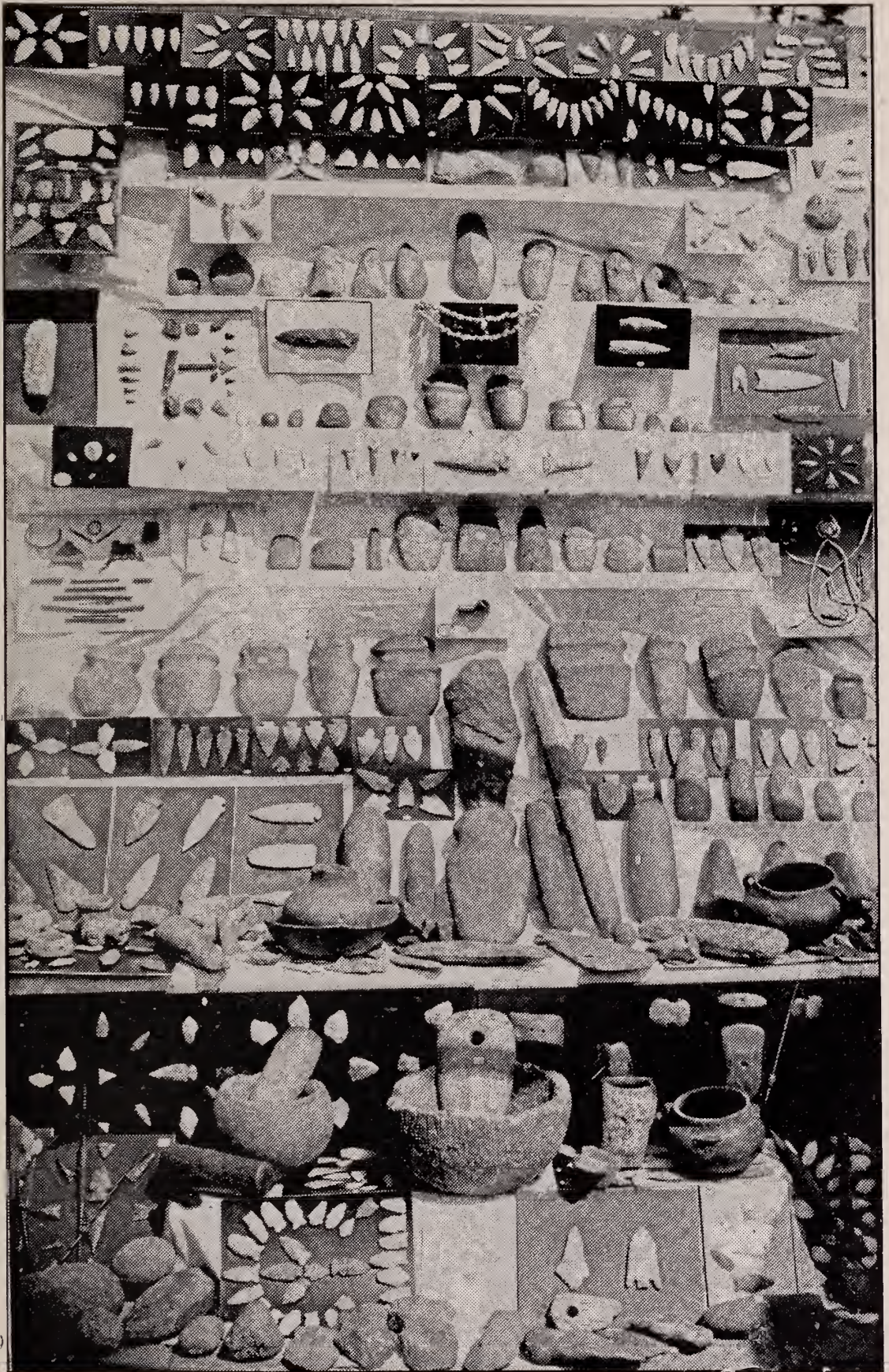
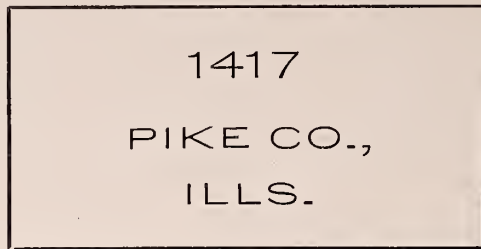


FIG. 1. TYPICAL COLLECTION. S. ABOUT 1-8 OR 1-9.

Number light specimens with India ink ; dark ones, with white paint. Record in a book the numbers, locality, etc. Large unsightly labels deface specimens and are an abomination. All scientific museums paint numbers on the specimens and record the same in books, or keep a card index. On large specimens the site may properly be painted or inked as :



But small objects look better if only numbered.

A collector who wishes to be well informed, or to become a student in the full sense of the word, should read such as he can procure of the works and reports mentioned at the end of this book. If one has time to carefully peruse even a few of them he will store his mind with a great deal of reliable and useful information.

In Figure I a typical collection comprising several hundred specimens is shown.* There are several thousand collections just about like this one, in the United States.

Many of the relics are good, but they do not appear to advantage because they are not as well mounted as might be. If the various types were grouped together the effect would be heightened. Most collectors fall into the same error and put specimens into their cabinets without regard to any fixed plan. It is just as easy to make a neat and attractive arrangement. Readers will do well to remember this suggestion.

* In each description of an illustration "S" refers to size. Thus S. 1-3 means scale (or size) one-third of the original.

Chapter II

Division of Implements

There are many schemes of classification of ancient relics proposed by the several authorities. We shall combine these various groupings into one.

Specimens may be separated into two great divisions.

First, The Known.

Second, The Unknown.

As the intelligent reader will observe, the Known class embraces those objects which are familiar to us. That is, of certain implements, ornaments, etc., we can say positively that primitive man made and used them for such and such definite purposes. Because we cannot determine for what purpose the others were used, they must be grouped under the "Unknown" heading.

Several ethnologists suggest a classification on yet different lines, using the occupations as a basis. For instance :

"The Man" ; Warfare, hunting and fishing, Ceremonial, religious and secret orders, etc.

"The Woman" ; Domestic and agricultural, Carrying industry, etc.

"Both Sexes" ; Clothing and personal adornment, Ceremonial, Religious, etc.

But we need not follow this scheme in its details as it embodies more ethnology than archaeology, and we are to study the latter rather than the former.

All the objects whether Known or Unknown fall under the following further classifications.

Chipped objects—such as arrow and spear heads.

Polished objects—such as slate ornaments.

Ground or pecked objects—such as axes or celts—and these often are polished.

Moulded objects—such as pottery.

Carved objects—such as bone and shell effigies.

Hammered objects—such as copper implements.

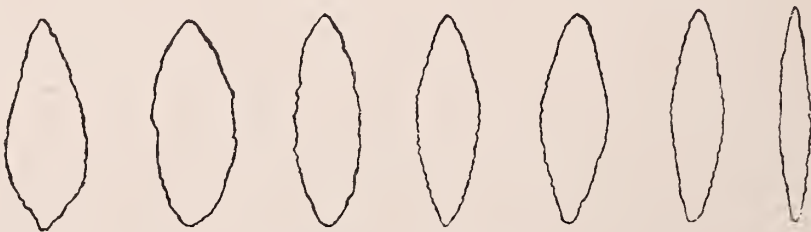
When one reaches the subdivisions, under the above heads, one is beset by difficulties. It is easy to separate implements, etc., according to the broader divisions, but as one form or type graduates into another, it is hard to say with assurance just where one type ends and another begins.

Chipped objects may be divided into three general classes.

1. FOR AGRICULTURAL PURPOSES, CHOPPING, ETC.
2. FOR CEREMONIAL, OR UNKNOWN USES. PARTLY FINISHED MATERIAL, ETC.
3. PROJECTILES, CUTTING AND SCRAPING, DRILLING, ORNAMENTS.

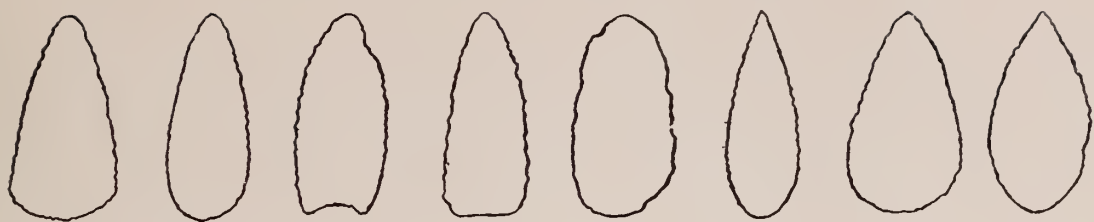
A comprehensive and practical classification of chipped implements has been attempted by the late Dr. Thomas Wilson, curator of the archaeological section of the U. S. National Museum at Washington, D. C. The specimens in that collection he divides into four grand divisions according to forms already well known and separated.* We reproduce his article in full. Each one of these primary divisions is classified into a number of subdivisions which are here shown.

Division 1, leaf-shaped. In this classification the leaf-shaped is placed at the head as being the oldest implement of its kind. This division includes all kinds: elliptical, oval, oblong, or lanceolate forms bearing any relation to the shape of a leaf, and without stem, shoulder or barb. Class A, is pointed at both ends. The widest place one third, or one fourth from the base.



CLASS A. FIG. 2.

* Arrow-points, Spear-heads, and Knives of Prehistoric Times, Annual Rep. of the Smithsonian Institution, U. S. National Museum, 1897.



CLASS B. FIG. 3.

Class B, is more oval, less pointed and with base concave, straight, or convex.



CLASS C. FIG. 4.

Class C, is long and narrow, with sharp points, parallel edges, and the bases are concave, straight, or convex. These belong to the Pacific coast.

DIVISION II

Division II, triangular. This division includes all specimens which, according to geometrical nomenclature, are in the form of a triangle; whether the bases or edges be convex, straight or concave. They are without stems and consequently without shoulders, though in some specimens the extreme concavity of the base produces barbs when the arrow shaft is attached.

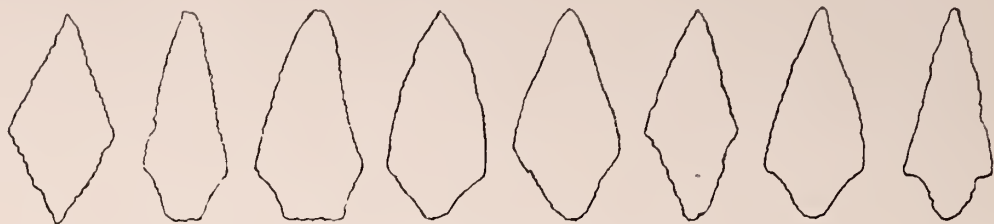


FIG. 5.

DIVISION III

Division III, stemmed. This division includes all varieties of stems, whether straight, pointed, or expanding, round or flat, except those with certain peculiarities and included in Division IV ; and whether the bases or edges are convex, straight or concave.

Class A is lozenge-shaped, not shouldered or barbed.



CLASS A. FIG. 6.

Class B, is shouldered, but not barbed.



CLASS B. FIG. 7.

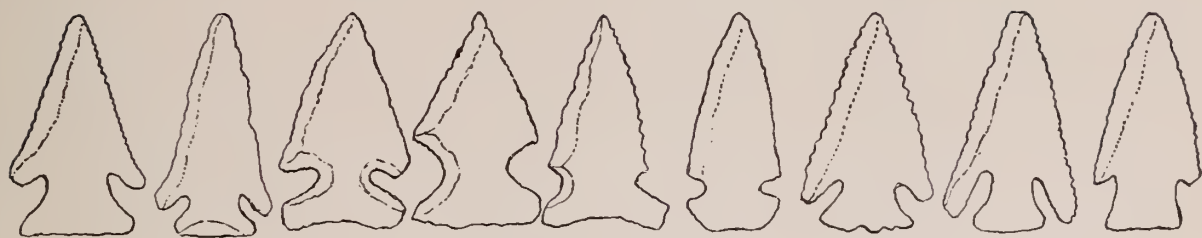
Class C, is shouldered and barbed. These Mr. Wilson says, "cover the commoner forms of arrow-points and spear-heads throughout the world. Certain other forms, few in number, or restricted in locality, and scarcely entitled to divisions by themselves, are nevertheless found in sufficient numbers and with such definite characteristics that they cannot be ignored." These he has placed in a general class under the head of "peculiar forms."



CLASS C. FIG. 8.

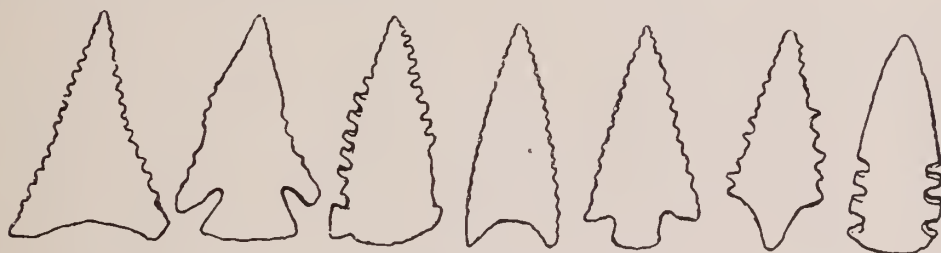
DIVISION IV PECULIAR FORMS

Class A, beveled edges.



CLASS A. FIG. 9.

Class B, serrated edges.



CLASS B. FIG. 10.

Class C, bifurcated stems.



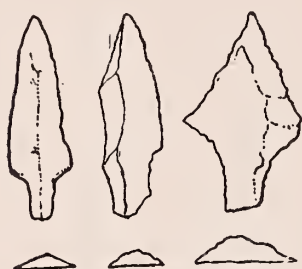
CLASS C. FIG. 11.

Class D, long barbs, square at ends. Peculiar to England, Ireland, and found in Georgia, in the United States. "Our interest in



CLASS D. FIG. 12.

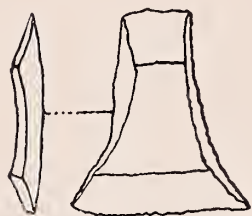
this class," says Dr. Wilson in his admirable work, "arises from the fact that, while they are confined to restricted localities in Europe as mentioned, they should have appeared in America in an equally circumscribed area, namely, the state of Georgia." An excellent specimen similar to the second shown in Class D, with a straight stem is shown by Sir John Evans as Fig. 318.* It was found in a sepulchral mound at Rudstone, England, in front of the face of an unburnt body. The base of the barbs which are as long as its stem are chipped almost straight forming a sharp point on the inner side of the barb. In Europe they are assigned by archaeologists to the first epoch of the Bronze period.



CLASS E. FIG. 13.

Peculiar to the province of Chiriqui, Panama. These are thin and narrow rude flakes struck from nuclei and left nearly in their original condition except that a rude stem has been chipped, and where necessary they have been brought to a point, as the material from which they are made is hard and refractory. The workmanship is rude.

Broadest at cutting end and chisel-shaped. They are thin, almost flake-like in appearance, not made pointed, nor are the edges worked down by secondary chipping. The cutting edge is at the front, at the broadest end, and, thus propelled, will make a wound wide and deep. It is a question whether these small flint objects were really the points of arrows. Several of them found in France and other parts of Europe were fastened in short handles, and may have served as knives. A cache containing several thousand specimens was found and is now on exhibition in the Museum of Antiquities at Copenhagen, Denmark. They may have served for different purposes, just as our varied flaked tools did in this country.



CLASS F. FIG. 14.

Polished slate points are peculiar to the Eskimo country, to New England and New York. Mr. Willoughby, of the Peabody Museum, found some long, polished slate blades, eight or more inches in length, in ancient graves in Maine.

*Ancient Stone Implements of Great Britain p. 343.

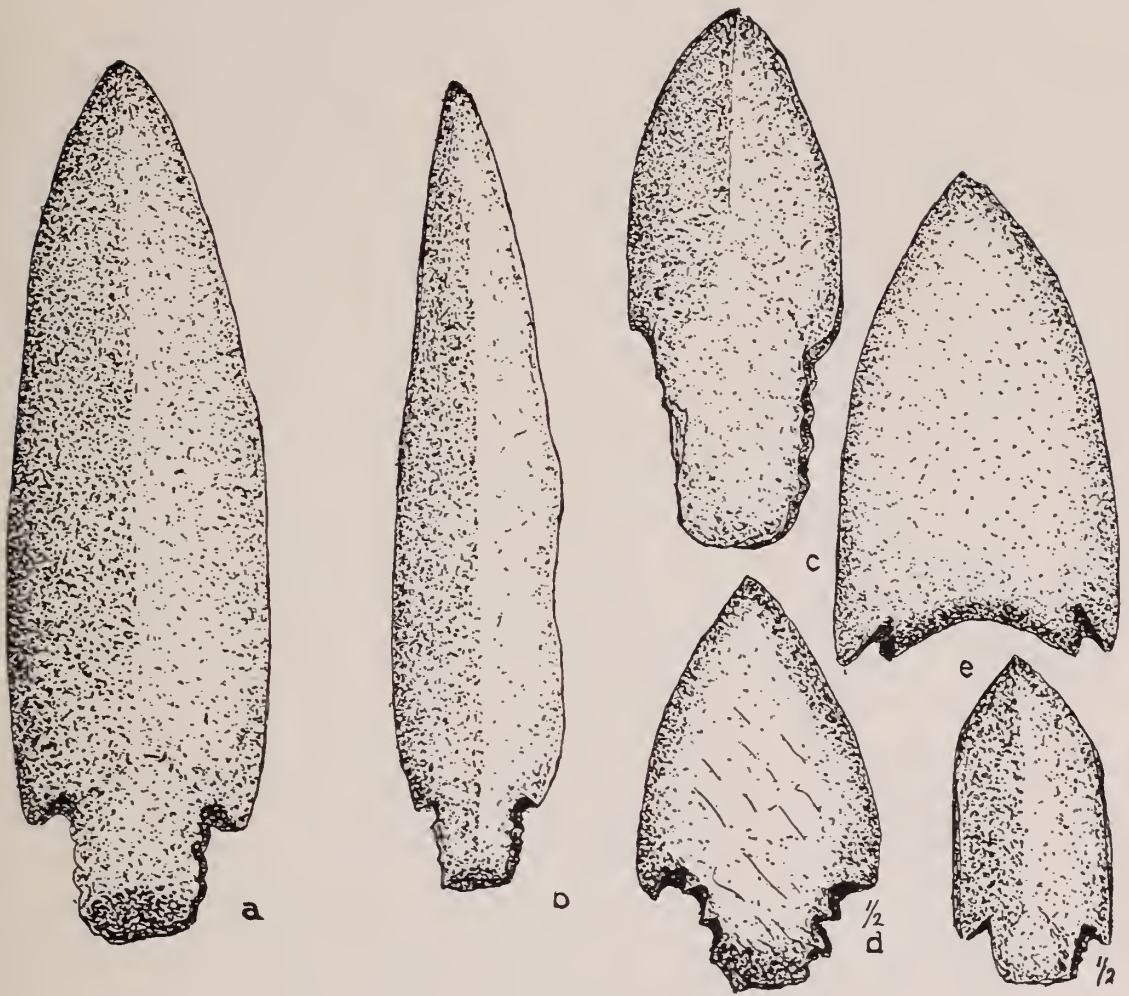


FIG. 15. SLATE POINTS.

From the collection of the University of Vermont. a, d, e, red slate. b, drab talcose slate. c, f, grey roofing slate. c, d, and e, S. 1-2. b, f, S. 1-3.

Chapter III

Large Chipped Implements used for Agricultural and Domestic Purposes

DIVISION I; CLASSES A, B, AND C.

Collectors have more flint implements than anything else. Moreover, such objects are greatly sought and seem to be highly prized. It is fitting, therefore, that we devote more space in this book to the varied forms of large and small chipped artifacts than to other types of implements or ornaments.

The chipped spades, hoes and flint celts are numerous throughout that part of the Mississippi valley lying between the Wabash river in Indiana and central Kansas and extending south almost to the Gulf. For agricultural and domestic purposes other implements were used in the East, notably the mussel shell and wooden hoe and the rude notched stone hoe. Barring here and there a "stray" for which it is difficult to account, the large flint implements are confined to the area mentioned.

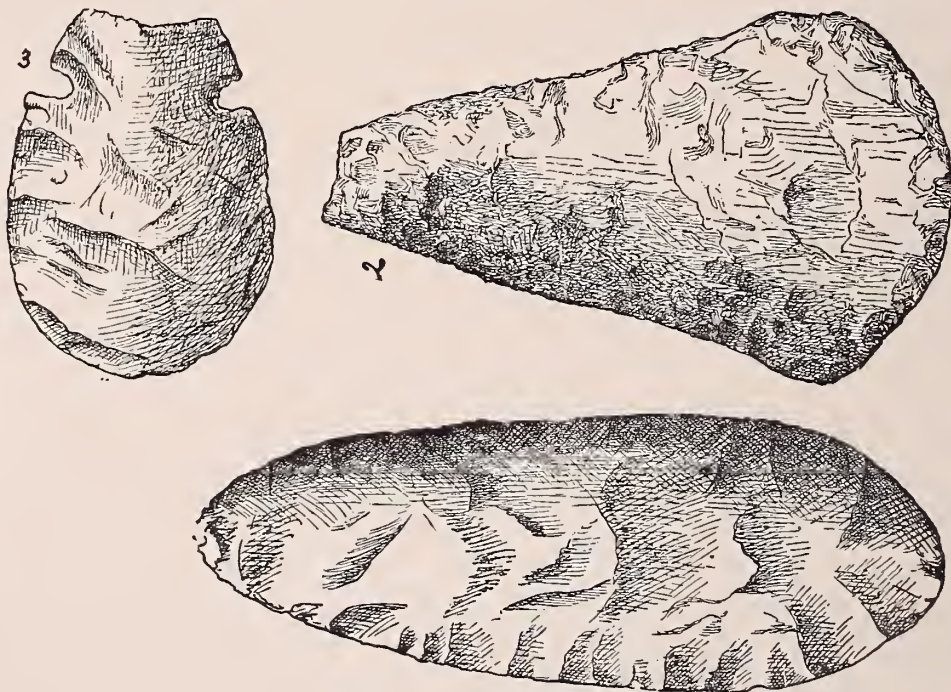


FIG. 16.

FLINT SPADES AND A HOE. MISSOURI.
HIST. SOCY. COLLECTION. S. 1-5.

Many of these are illustrated and described in that excellent work written by Gen. G. P. Thruston entitled, "The Antiquities of Tennessee." In Figure 16 we show two typical spades and a hoe. No. 1 is the oval or common form. No. 2, that type having a broad edge and tapering to a narrow top. These objects range from seven or eight inches to as much as twenty inches in length. Some of them are thick and clumsy while others are thin and delicate. Over half of them show polish on the edges and this is due to long continued use in preparing the soil for the planting of corn, beans, etc. No. 3 is a notched hoe, somewhat rarer than the spade. Fig. 18 shows an agricultural implement from Pennsylvania. It may be taken as typical of the eastern forms. Manifestly, many of the rudest chipped objects, especially those that are rather thick, may have been spades and hoes and to classify them all as unfinished objects might be an error.

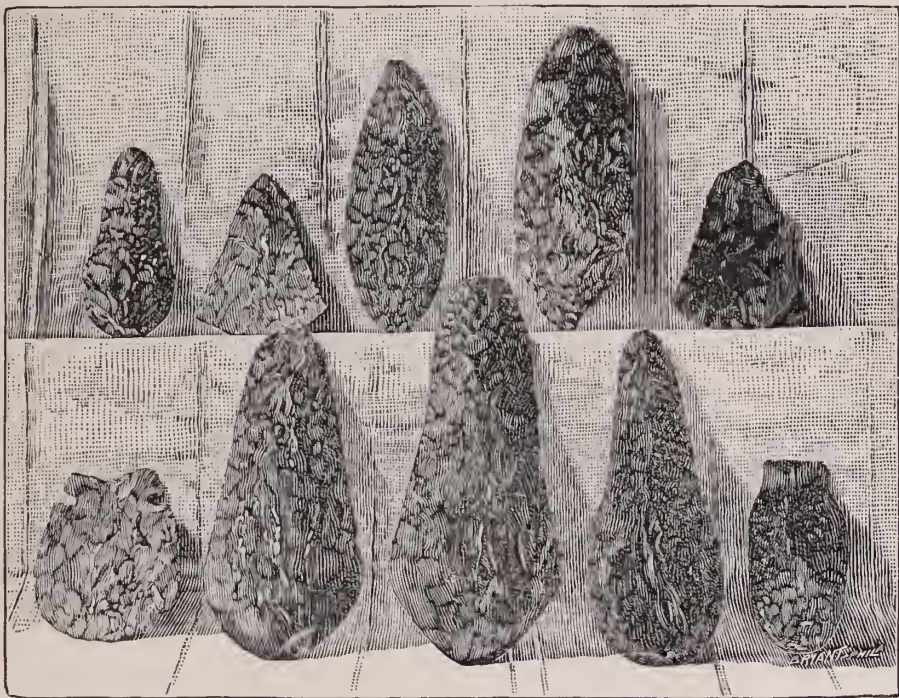


FIG. 17. FROM THE BECKWITH COLLECTION, SOUTH-WEST MO.

These spades and hoes are exceedingly well made. All the types are shown ; notched and unnotched hoes, oval spade, triangular spade, and fancy spade. S. about 1-13.



Agricultural

Implement.

FIG. 18. NORTHAMPTON, PA. MATERIAL, JASPER. S. 1-2

Akin to the flint hoe is the flint celt shown in Fig. 19. A line of demarcation where the celt ends and the hoe or spade begins cannot be drawn with certainty. The flint celt in the South and the West took the place of the stone celt in the East; and as the stone celt in the East may have been used as a hand hatchet, as a tomahawk, as a digging tool, to hollow out dugouts, and for multitudinous other purposes, so the flint celt of the Mississippi valley served a similar purpose. Fig. 19 shows a typical celt polished at its lower

edge and bearing traces of long continued use. A small percentage of celts are well made, for the major part of them are rough and

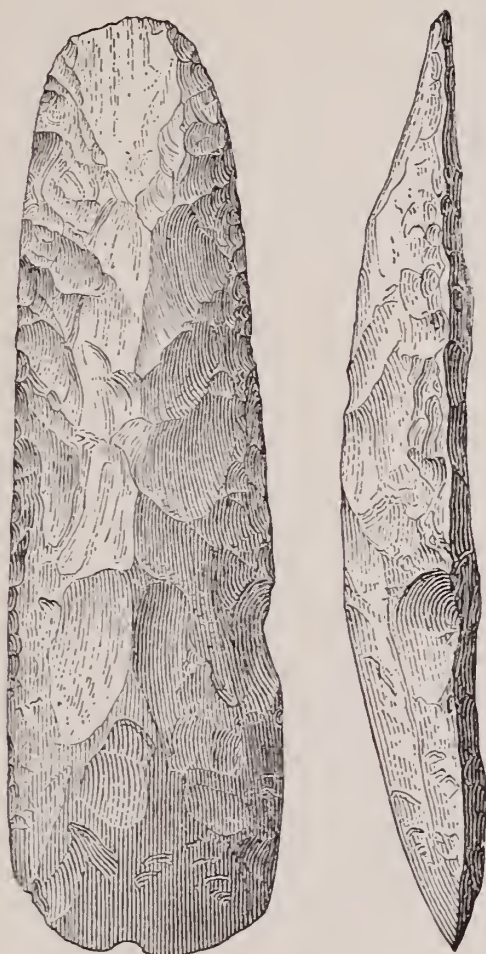


FIG. 19. FLINT CELT, ALEXANDER CO., ILLS. S. 1-2.

rude affairs and frequently we cannot tell whether the object is to be classed as a flint celt or should fall under the category of "turtle-back" or unfinished object.

Some of the spades and hoes and polished celts are so finely wrought that one may doubt whether they were used for menial purposes. In Tennessee not a few large flint implements have been found and they are so delicately wrought that Gen. Thruston and other observers have classed them among the ceremonials rather than as implements. Notable among these are upwards of forty flint swords and sickle shaped objects of remarkable size and beauty. These were found in a grave not far from Nashville and are now pre-

served in the Missouri Historical Society collection at St. Louis. Such objects may have been made by a most skilful worker in flint simply to show what he could do. In stone age times they perhaps represented the height of the art of chipping flint.



FIG. 20. S. ABOUT 1-3.

Large flint implements from Indiana, Illinois, and Ohio.

Probably these are rather ceremonial than for use as common knives and spear heads. The longest one is over ten inches in length.

In Fig. 21 we illustrate some of the large, well-chipped obsidian blades found along the Pacific Coast. Blades, swords, ceremonials, or whatever they are, have been found from time to time. They range from ten to twenty-five inches in length. Magnificent specimens of these are in the Smithsonian, American, and Peabody Museum collections.



FIG. 21. LARGE OBSIDIAN "KNIVES". J. A. HARRIS COLLECTION.
SIZE ABOUT 1-6.

Another kind of a large implement is the leaf-shaped. These are shown in Fig. 22. Usually they are finely wrought; thin and sharp. They are of such form that they could be notched and made into spears, or used in their present condition as knives. Often archaeologists find them in caches or deposits — as if buried by some prehistoric merchant. Evidently they represented an article of commerce. Sometimes as many as two or three hundred leaf-shaped implements have been found in a single cache. At the Hopewell Group in Ohio, 7232 were dug out of one mound.

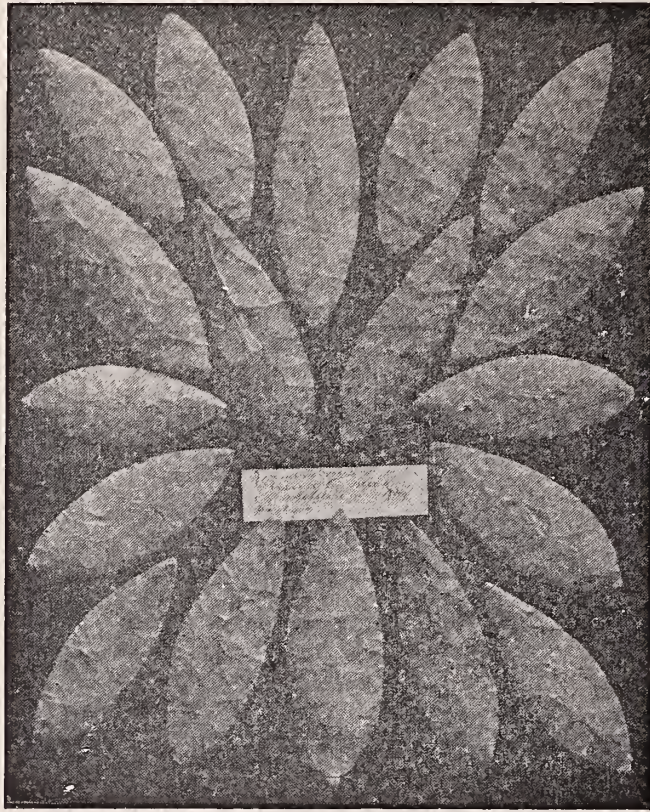


FIG. 22.

Some leaf-shaped implements from a cache in Michigan. Size about 1-6.

Classes A and B are chiefly confined to knives, blades, etc. Fig. 22 illustrates this group. Class C embraces knives and also lance-heads, or unbarbed spear-heads.

In Division II are to be included many blunt and thick points.

Usually, these are in the more refractory materials such as argillite, quartz and pebble-chert. But, of course rude and crude objects are to be found in any class of relics. The finest war points come from the Columbia River Valley and Pacific Coast. However, very nice ones are to be obtained in the Western Ohio Valley, in Arkansas and in New York State.

The triangular points could have easily been notched and made into ordinary arrow-heads. Doubtless many were so treated. It was easy for the aborigine to change a simple object into a more complicated form and that he did so, we have abundant evidence.

As to the power of penetration of arrows, and the strength of bows Mr. A. F. Berlin, in "Prehistoric Implements" (P. 193) quotes several observers :

"The traveller Carver was told by the Winnebago Indians, who then lived in what is now the state of Wisconsin, that they sometimes made war-excursions to the south-western parts,—then Spanish possessions,—and that it required months to arrive there.* The Indian propelled his arrow-tipped shaft with wonderful force and exactness. So strong were these Red people, and so dexterous in the manipulation of their bows, which were as thick as a man's arm, about eleven or twelve spans in length that they could project their arrows a distance of two hundred paces.

"The Spaniards under the adventurer De Soto experienced this to their sorrow while arrayed in battle against them. Their armor was pierced by these small points and many of them were wounded and killed, the arrows passing completely through their bodies. At the battle of Manilla two hundred Spaniards were killed; of the remaining living one hundred and fifty received seven hundred wounds. Cabeza de Vaca, a Spanish writer, who accompanied this unfortunate expedition tells us that he saw the butt of an elm tree which had been penetrated by an arrow the depth of a span.

"Among other instances he mentions that of an arrow shot by an Indian which pierced through the saddle and housings and penetrated one-third of its length into the body of a Spaniard's horse.

"So proficient in archery, says Clavigero in his History of Mexico, were the Aztecs at the time of the invasion by the Spanish adventurer Cortez, that it was usual for a number of archers to as-

* Carver. Travels, etc., Harper's Reprint, New York 1838, p. 42.

semble and throw up an ear of maize into the air, at which they immediately shot with such quickness and dexterity, that before it could reach the ground it was stripped of every grain.*

“The chevalier Tonti, who travelled in the now western part of the United States two hundred years ago, alluding to the force with which the aborigines projected their arrows says: ‘That which is wonderful in this, is the havoc which the shot sent by the savages makes; for, besides the exactness and swiftness of the stroke, the force of it is very surprising, and so much the rarer, because it is nothing else but a stone, or a bone, or sometimes a piece of very hard wood pointed and fastened to the end of an arrow with some fishes-glue, that causes this terrible effect.’”

* Life of Hernando Cortez, Arthur Helps, Vol. I, foot-note, p. 76.

Chapter IV

DIVISION III. STEMMED.



FIG. 23. LOZENGE-SHAPED IMPLEMENT

S. I-I.

Here we have a wide range, from the lozenge-shape to the deeply barbed and specialized forms.

In order to make clear to collectors, who may become confused by the nomenclature employed in describing different parts of an arrow or spear head, the following plan prepared by Mr. Gerard Fowke will be of value.*

* Bureau of American Ethnology Report, '91-2. P. 143.

- | | |
|-----------------------|-----------|
| a — point | f — tang |
| b — edge | g — stem |
| c — face | h — base |
| d — bevel † | i — notch |
| e — blade | k — neck |
| m — barb, or shoulder | |

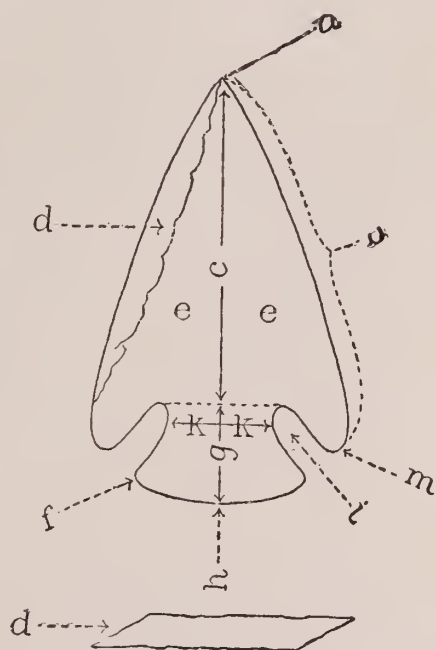


FIG. 24. S. I-I.

† The section below shows this more plainly.



FIG. 25. MICHIGAN. S. I-1

The variations of these types are many. In Figure 25 we have a leaf-shaped object which has been notched and made into a spear. It was found in the Saginaw valley by Prof. Harlan I. Smith, and illustrates how that the simple process of cutting notches may change the character of the implement. Figure 25 stands for the merging of Class A into B.

Fig. 26 is a peculiar lance or spear-head having a very long stem. Stemmed points are quite common, but it is seldom that the stem is so long as in this. It is an open question as to whether such a form as this was a lance-head or knife.



FIG. 26.

Gray flint, Blue Grass, Iowa. S. 1-1.

Figure 27 is a shouldered spear-head. It might be well to remark here that there is a diversity of opinion as to where arrow-heads end and spear-heads begin. We are of the opinion that an implement more than one and three-quarters inches in length might be classed as a spear-head. That is, a shouldered or barbed, or lance-like implement which was, manifestly, not a knife. But a slender and thin point of two or two and a half inches in length might be used to tip an arrow. The weight, thick-

ness, etc., makes a great difference. A heavy point was much more convenient as a spear-head; a light point, as an arrow-head, as any who has practiced archery well knows. An archaeologist experimented with one of the heavy Yew bows which were common in England and this country some twenty-five years ago when archery was popular. The bow pulled about 60 pounds, and the greatest range was something over five hundred feet. The weight of the arrow-head made a great difference in the force, trajectory, range, and all other points observed. Therefore, in establishing a line of demarcation between arrow-points and spear-heads, it is not so much the length but the size, thickness, etc., of the implement which is to be taken into consideration.

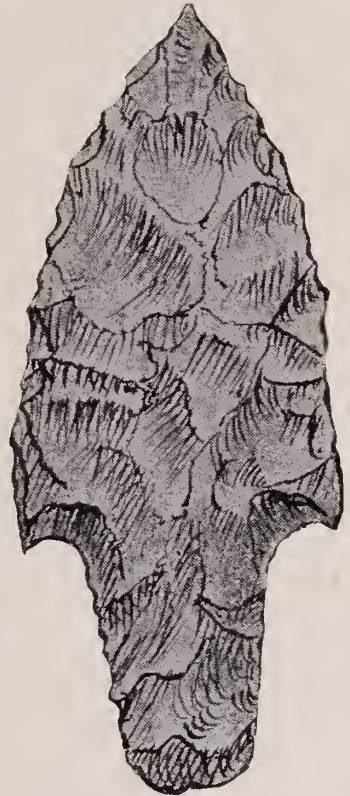


FIG. 27. S. 1-1.
SCOTT CO., IOWA.



FIG. 28.

A broad spear-head from Iowa. S. 1-1. From its form one may conclude that it was chipped from a larger implement which had been broken.

In Figure 29 the shoulders are much broader than the body of the spear-head. The form is more common South than North.

Savannah Valley, Ga. S. 1-1.



FIG. 29.

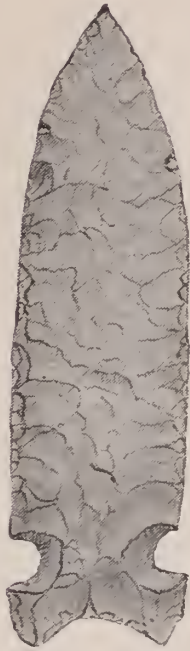


FIG. 30. BLUE GRASS, IOWA. S. I-I.

This marks the division between B. and C., as it may be classed with either.



FIG. 31. WHITE FLINT, SCOTT CO., IOWA. S. I-I.

Fig. 31 has a long stem and the shoulders or barbs are pointed. This form is somewhat rare.



FIG. 32. SCOTT CO., IOWA. S. I-I.

To recite all the other variations would occupy more space than can be given to flint implements in this little work. Figures 32 and 33 will have to suffice.



FIG. 33. S. I-I.

Chapter V

Peculiar Forms and Drills

DIVISION IV.

There is no lack of oddities and "unknowns" among flint implements, and Dr. Wilson might have expanded his scheme so that it would comprise drills, scrapers, knives, etc.



FIG. 34.
LAWRENCE CO., O.
S. I-1.

In Fig. 34 we have a common arrow-head, but the edge has been chipped so that a broken line appears rather than a graceful curve or straight sides. These are rare.

Figure 35 shows one of the rechipped, single-barbed arrow-heads. Probably it originally had a similar barb on the right. The single-barbed projectile points are found in some numbers in southwest Missouri and northern Arkansas. The purpose of these is not known.



FIG. 35.
FRIERSON, LA.
S. I-2.

Figs. 29, 33-4 are taken from Mr. Fowke's Stone Art, Bureau Ethnology Report. 1891-2.



FIG. 36. ROTARY SPEAR-
HEAD. ELKTON, TENN.
S. I-I.

Figure 36 is one of the rare forms of rotary and serrated spear-heads. It is beveled to the left, as most of them are. Just why flint implements like this should have been beveled, one may not know. Dr. Wilson and others affirm that the beveling does not give a rotary motion to the point when shot, but that such motion was obtained or controlled by the feathers upon the shaft. It is quite obvious that a rotary and serrated spear-head, or arrow-point, would make a larger wound than an ordinary point; and the animal would soon become exhausted from loss of blood, etc. We are of the opinion that such implements were used in hunting large game. Any one who has hunted with modern, small-calibre ammunition knows that the soft-nosed bullet is preferable to a bullet making a small, clean wound. The old style, large-calibre ammunition will speedily bring down almost any big game; whereas, the same animal will run a long distance after having been shot by a high velocity, small-calibre bullet. A bow is not as effective as a rifle, and, as the pre-historic tribes were dependent upon their bows and spears to a great extent, they naturally employed projectiles which would bring about the greatest possible execution. This must be taken into consideration when studying flint implements.

Throughout the far West are found the minute points and knives of obsidian, carnelian, agate, jasper, agatized wood and other semi-precious stones. Because of their beauty, they have long been prized by collectors. An endless variety is found. Unfortunately, we cannot show more than a few of them.

a b c d e



o n m l k j i h

FIG. 37. S. 2-3. THOMAS COLLECTION, IDAHO AND OREGON.

The workmanship on these 18 points is exceedingly fine.

- A. A long, narrow point of obsidian.
- B. A thin, narrow point of obsidian.
- C. A typical broad point of obsidian.
- D. Very small and of fantastic form. Obsidian.
- E. Made in the shape of a fish. Carnelian.
- F. Smaller than the average. Clear agate.
- G. The usual Oregon type. Moss agate.
- H. Unknown form. Agatized wood.
- I. Crescent form. Lance knife?

J-K. Banded carnelian.

Above them is a remarkable pattern cut out of red and white agatized wood.

L. Very fine one of obsidian.

M. Note the difference in the barbs between this one and the others.

N. Common form in obsidian.

O. Unusual form in obsidian.

Near Stockton, California, some curious knives occur. Ten of them are shown in Fig. 38. The Rev. Mr. Meredith has described these in the *American Archaeologist*.* In that paper he expressed



FIG. 38. OBSIDIAN KNIVES, STOCKTON, CAL. S. ABOUT 2-3.

the opinion that the "Stockton curves" were used to scarify the flesh on ceremonial occasions.

*Vol. II, P. 319.

In British Columbia fantastic forms in chipped objects are found.

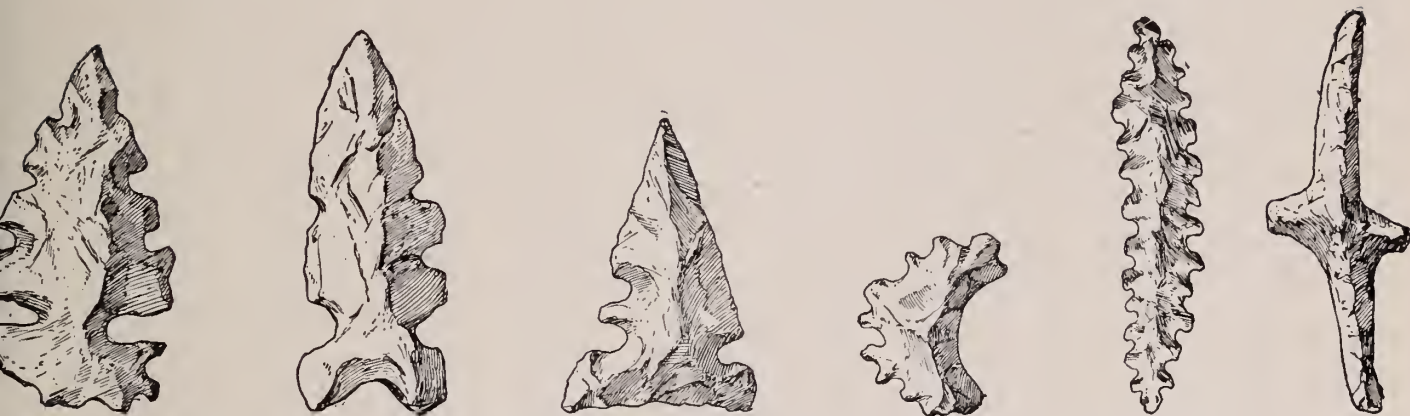


FIG. 39. UNKNOWN FORMS; MATERIAL, GLASSY BASALT. LYTTON, B. C. S. I-1.

Cut loaned by the American Museum of Natural History, New York. Prof. Harlan I. Smith, Collector.

The scraper is widely distributed. It is notched or unnotched, large or small, curved or straight, oval or round. But the method of hafting was practically the same.

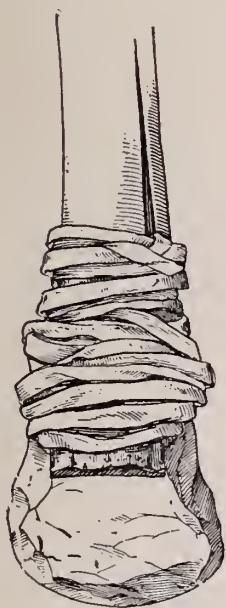


FIG. 40. S. I-4.

Fig. 40 is a skin scraper in wooden handle. Shuswap Indians, Kamloops, B. C. "Many scrapers of this sort, and some natural fragments of convenient form from neighboring outcrops, have been seen in use among the women of this region for softening skins.* They were inserted in the split end of a wooden handle about three feet in length, and held there by winding with a thong that portion of the wood that held the stone. After the skin has been fleshed and freed from hair, it is stretched upon a framework of poles and prevented from becoming hard and stiff by being scraped and poked with such a scraper until it is thoroughly dry. The specimen shown in this figure is much worn by such use."

Scrapers constitute a large and important class of flint implements. Among them are thick, curved flakes, one end of which has been chipped to a chisel form. Curved scrapers

* Jessup, North Pacific Expedition. *Archaeology of Lytton, B. C.* Harlan I. Smith, May, '99, pg. 147.

were exceedingly convenient because the under surface was always smooth, and the implement would neatly fit the hand, lying along the side of the index finger, with the end against the base of the thumb, and the scraper side slightly protruding beyond the joint of the index finger. Scrapers were often made from broken arrow heads. Nearly all scrapers having notches were originally spear or arrow-heads. The primitive artisan showed his good sense and economy in utilizing broken specimens in this manner.

Now, the scraper graduates into the knife. We cannot draw a line between them, although we can easily distinguish the extremes. But drills do not resemble the other classes.

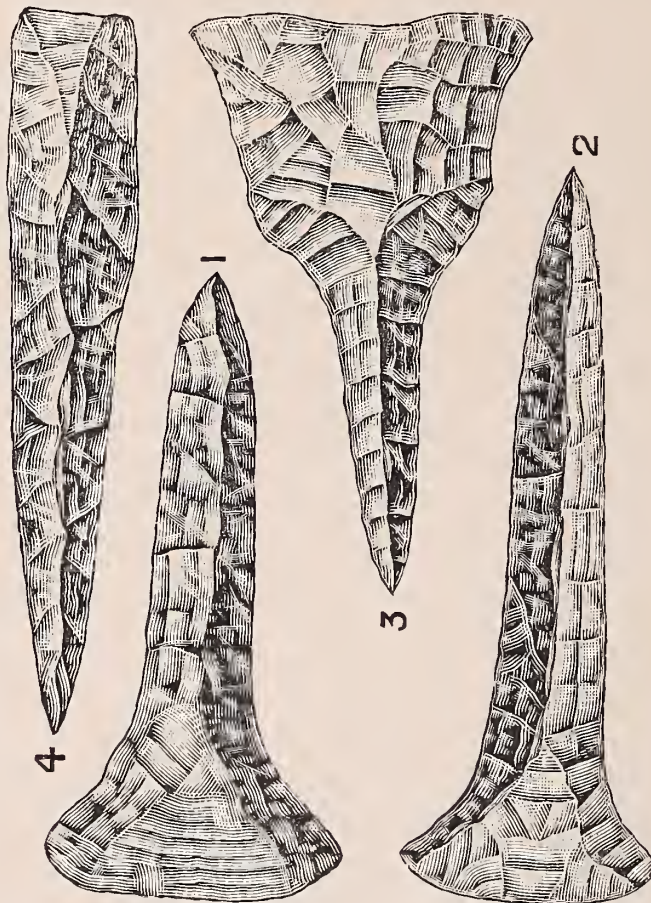


FIG. 41. DRILL FORMS, OHIO VALLEY. S. I-I.

Many of the objects which we have been calling drills were doubtless used as ornaments, or employed for purposes other than the perforating of shell, stone, and bone materials. Some ten years ago, Dr. Steiner of Grovetown, Georgia, advanced the theory that the

long and slender ones could not have been used in drilling, but, on the contrary, were hair pins. He remarked the similarity between these and the long shell pins found in southern mounds and graves, and which are considered hair pins by archaeologists. Since Dr. Steiner's opinion was given several persons have claimed the credit of the theory. Most collectors think Dr. Steiner is correct. We will admit that most of the drill-shaped flint and stone artifacts were used by the aborigines for drilling purposes, for the greater number are short or thick, or of such shapes as preclude the idea of having been worn as head ornaments.

But the long and slender drills — say three and one-half to five inches — have certainly been chipped out by skilled and careful workmen, and were manifestly too valuable to be risked as mere tools. They can be subjected to but slight usage — for the danger of breaking is great. Moreover, a hollow reed or a hardwood stick served the purpose just as well and could be easily replaced. Therefore, one cannot believe that they are merely perforating tools.

For classification purposes drills may be treated of in two sections — the “broad top” and the narrow, spike-like forms. There are variations in size. These do not justify us in forming subdivisions.



DRILL, ONACHITA CO., ARK. S. UNKNOWN.

FIG. 42.

Number 1 in Figure 41 shows the ordinary “rounded top” form. Number 2, the small top and slender body. Number 3, the square top; and Number 4, the thin drill. There are many modifications of the type. Some are thick, others thin; some short, others long; some have broader tops and narrow sharp points, others have blunt points. They have been called “rimmers”, etc. Some of them are very rude, especially those found on work-shop sites, and they may represent unfinished specimens. Some are three to four inches long, but there are very delicate ones from Tennessee, which

were less than an inch in length, yet exceedingly thin and having quite sharp points. One authority says that he concludes that the small and sharp ones were used as lancets.



FIG. 43.
BLUE GRASS, IOWA.
S. I-I.

This, perhaps, is a perforator made from a larger implement which was broken and then chipped to restore it to usefulness. It has an unusually broad top or base and is somewhat peculiar on that account.

Just why a drill or perforator should have so broad a top we cannot perceive, unless that such were designed for hand tools and not intended to be fitted into a handle.



FIG. 44. KANAWHA VALLEY. S. UNKNOWN.

Long body, short drill point. Perhaps not a perforator at all.

Probably a projectile point. We cannot say with any degree of certainty what it was.

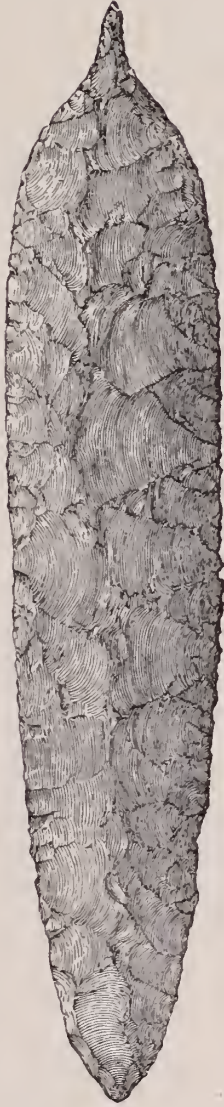


FIG. 45. BARSTOW CO., GA. S. UNKNOWN.

In Figure 45 is another unknown. Mr. Fowke illustrates it in his *Stone Art.* and says that it is a "large implement". What was it used for? Why is the small, sharp point? These questions are easy to ask and difficult to answer.

Figs. 44 and 45 are from Mr. Fowke's *Stone Art*; Bureau of Ethnology Report. '91-2.

It is scarcely necessary to call the attention of readers to the difference between the slender hairpin form and the shorter drill form. We cannot see how the same purpose can be assigned to both forms; yet several archaeologists call all of them drills, no matter how slender they may be.

For drills, etc., the same materials were employed as for spear and arrow points, and knife blades.

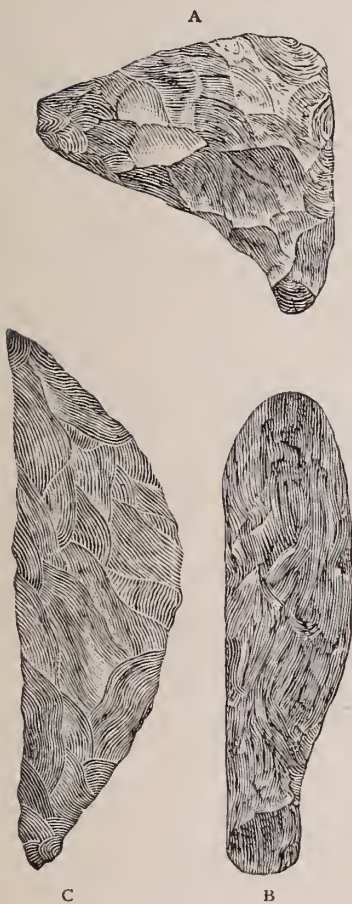
A much larger number of broken drills are found on the camp sites and fields than of perfect ones. Frost, or a flaw in the material, or a misdirected blow by a aboriginal worker — these have conspired to produce many broken specimens.

Illinois, Missouri, Ohio, Western New York, Michigan, and Tennessee furnish the finest. Some very good ones come from the South, but, as a rule, Southern types are rude. They are rare in the Southwest and on the Pacific coast. But few are found in New England. Canadian collections show that this relic is found in considerable numbers north of the Great Lakes. Specimens more than five inches long are very rare. The longest drill we ever saw was 7 1-4 inches.

There are a few very minute odd-shaped relics, which may be perforators (or used for some unknown purposes), found in various parts of the country. Some of these are "three pronged", others are curved and may have served use as fish-hooks. One is illustrated on the right in Figure 39.

Chapter VI

Flint Knives and Distribution of Materials and Forms



A. Form of knife somewhat different from the oval.

B. Knife with well defined handle.

C. Semi-lunar knife with pointed ends.

FIG 46.

FLINT KNIVES FROM GEORGIA.

S. 1-2.

Flint knives are common throughout the western continent and present a great variety of form and material. In numbers and dis-

tribution they rank second to arrow-heads, but are in preponderance over spear-heads, scrapers, etc. The forms cannot be clearly separated as in arrows and spears, but on the contrary they shade or merge from one type into another.

A knife was a universal tool. It found its place in every household, at the side of every warrior, in the hunter's belt, in the priest's paraphernalia, at the funeral, etc. In short, it was ever present. It might be rough or well finished—a rude specimen of poor chert, or a work of art in chalcedony,—a common hide scraper and cutter in the hands of an old squaw, or a beautiful obsidian blade in the possession of a high chief. Many of our best steel blades today are identical in form with the flint knives of long ago; and the difference lies not so much in shape as in man's inventive genius and the improvement in materials.

Very rude, thick or "clumsy" arrow-heads are usually considered unfinished. No so with knives. Some are undoubtedly incomplete. But crudeness in a knife does not imply lack of use. The roughest specimens may have seen service. Dr. Wilson's A. and B. in Division I present common knives. The chipping is fairly well done, yet in many specimens of this form it is much rougher, the flakes being larger. Of such, either end could be used to advantage. The indentations are due to flaws in the material or haste on the part of the maker. They indicate no purpose. The artisan wanted a knife and was not particular as to form of workmanship. A prevailing form is a simple flat flake, two to five inches long and one-half to two inches broad. Slightly thick at the top (1-8 to 1-16 of an inch), it tapers to a very sharp edge. Apparently it was struck off by one blow off the hammer. In some specimens the edge has been worn until dull, then it was rechipped very delicately. Knives of this type are sufficiently sharp to sever tendons or muscles. The curved flake knife we have always thought to have been for flesh cutting. They have been used in historic times by shamans for surgical, sacrificial and other kindred purposes: also in torturing captives, etc.

The semi-lunar knife is found in New England, Canada and New York State. The form is supposed to have been derived from the Eskimo. Collectors who possess variations of C in Fig. 46 are fortunate. The best specimens of the "double curved" knives, well

chipped and thin, are very rare. Moreover, they are more interesting and appear to better advantage in a cabinet than any other flint



FIG. 47. STRYKER, OHIO.
S. 1-2.

objects. We do not except spears or "drill-shaped" specimens of the highest grades. It must be borne in mind that the type is much finer than the illustration indicates. Sometimes they are as thin as sickle blades, but more frequently less curved and about 1-4 to 1-3 of an inch in transverse section in the thickest portion. They range from three to six inches in length. The points are seldom as sharp as we have shown this one to be. Usually they are slightly rounded. But the final chipping (bone

tool chipping or flaking) is exceedingly well done. Undoubtedly only the chief men, priests, etc., of tribes possessed these better implements.

By sickle form one does not mean those Tennessee and Georgia peculiar curved implements. That some genuine specimens have been secured no one can deny. But a large number of unheard of forms have since been manufactured and sold. Collectors would do well to taboo all "ceremonial crooks" or other freaks unless familiar with the locality and the finders. The Ohio Valley curved knife is, by no means so curved as the Tennessee ones. Moreover, so far as we are aware, it has not been counterfeited.

In addition to the double curved knife there is a knife with a straight back and a curved or oval edge, a long thin knife such as Dr. Wilson shows in the two specimens to the right in Division 1, Class A; also the curved back and concave edge. Then there is a long dagger-like implement which may properly be considered a knife. The handle is much thicker than the blade and the object varies from seven to ten inches in length. Shorter knives were set in wooden or bone handles. Several bone handles have been found in the Ohio gravel burials and wooden handles are not uncommon in the Cliff-dweller country where the aridity of the atmosphere has preserved them. For variety and fineness, Tennessee and Ohio may

well be ranked first. The finest work in small knives is found on the Pacific coast.

Sometimes knives are shouldered or notched in order that they may be securely fastened in the handle. One of these is shown in Figure 48. Larger spear-heads, on becoming broken were fashioned into knives or scrapers.

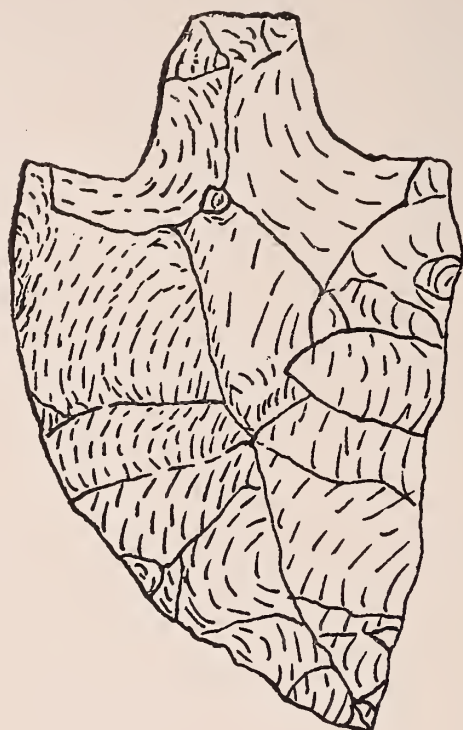


FIG. 48. FRIERSON, LA. S. I-2.

Chapter VII

Manufacture of Flint Implements

A great deal of nonsense is in circulation among collectors with regard to how the aborigines made the arrow-heads, spears, knives, etc. The late Professor Frank H. Cushing experimented not a little along this line. Mr. J. D. McGuire of the Smithsonian Institution, whose work is referred to in a number of places in this pamphlet, is also an authority upon this subject. Lewis and Clark in their famous expedition of 1803-5, record that they saw the Indians of the Upper Columbia river making obsidian arrow-heads. The arrow point was chipped with bone and the process was rapid and skilful. A resume of the conclusions of these gentlemen might be stated as follows:—

Three kinds of flint were used; the nodular flint, that of concretionary formation and found in certain portions of the United States; the drift flint, being composed of pebbles or irregular pieces of flint found in the gravel of streams; and the quarry flint—which is considered the best of all—which is found in layers in certain portions of the country, notably in Indian Territory, Illinois, Kansas, Susquehanna Valley, Pa., and Flint Ridge, Ohio. Whether the man secured a nodule or whether he quarried his flint it does not matter. The first step in the process was the rough blocking out of the specimen. He took an ordinary water worn stone of hard material and using it as a hammer stone, he struck off irregular flakes, directing his blows to the right or to the left, according to his desire; then turned the object over and repeated the process on the other side. With a smaller hammer he detaches small flakes or chips and having reduced it to the form of a turtle back or disc he did the final chipping with bone.

Mr. George Sellars wrote an able paper upon the manufacture of flint implements and we regret that we have not sufficient space to reproduce it in full. Readers are referred to the original * and also to a paper on the same subject by W. K. Moorehead.†

* *Observations on Stone Chipping*; George Sellars, of Illinois. Smithsonian Report, 1885, p. 87.

† *Prehistoric Implements*, p. 401.

“It is the large hoes and spades flaked from quartzite slabs that to me are evidence of a much higher degree of intelligence and skill than the most highly finished spear and arrow-points evince. Take an edge view of one of these large spades, and observe how accurately straight and free from wind, the edge has been carried entirely around the implement, the flattening of one side and rounding the other; then observe that the long flat very slightly depressed flakes have been thrown off at right angles to the edge, even to those curving around its digging or cutting end, which appear to have radiated from a common center. If these flakes have been thrown off by blows so struck and directed as to preserve the cleanly lined edges, as the operator has carried them in his mind, a skill must have been acquired that we cannot approach.

“In all the experiments that I have tried with a hammer, whether of stone, steel, soft iron, or copper, they have failed to produce the desired result; the seat of the flake is more conchoidal, shorter and deeper depressed, whereas the direct percussive pressure throws off the shape of flake that we find has been done in making these spades. If this mode has been resorted to, it necessarily required considerable ingenuity in devices for holding the stone slab firmly, while the pressure was being applied in the right direction. The wooden clamp described by Catlin may have been used. The simplest device that occurs to me that will answer the purpose is a block of wood planted in the ground, with its end grain up, cut on top into steps, the lower steps having grooves parallel with the rise of the upper step; in one of these grooves the edge of the implement is placed, its back resting against the edge of the higher step. When in this position, presenting the proper angle to the operator, a man holds it firmly while another applies the pressure. A lower step, with the back edge of its top hollowed out to receive the work, while its lower end rests in an indentation in the lower step. In this manner a spade can be firmly held while its cutting end is being flaked. I do not present this as the mode that was practiced, but as a device that answers the purpose, and I judge to be within the capacity of the ancient flint-workers, of whom there is nothing left but their chips and their finished work.

“Let any one experiment with a bone point in chipping flint; he will soon discover the value of a dry bone, a bone free from grease

that will hold to its work without slipping, a bone with sufficient hardness to resist abrasion, a bone of strength to bear the pressure, and he will value such a pointed bone, and will understand why, with such a bone, John Smith's ancient arrow-point maker 'valued his above price and would not part with it.' I have been informed that the modern Indians free their flaking-bones from grease by burying them in moistened clay and wood ashes, not unlike the common practice of our housewives to remove grease from their kitchen floors.







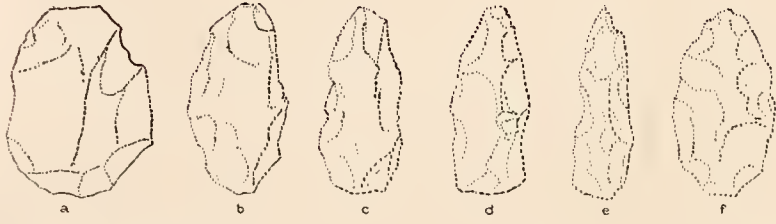
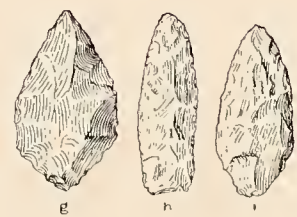
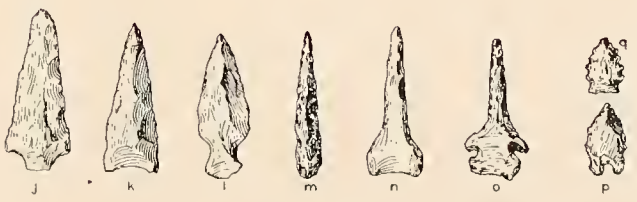

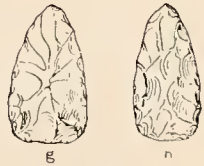

"The hunter or trapper described to me the mode still in practice among the remote Indians, of making flakes by lever pressure combined with percussion, that is more philosophical and a better mechanical arrangement than by the use of the flaking staff, as described by Catlin. They might utilize a standing tree with spreading roots for this purpose; a flattened root makes a firm seat for the stone, a notch cut into the body of a tree the fulcrum for the lever, either a pointed stick is placed on the point of the stone where the flake is to be split from it, its upper end resting against the under side of the lever, or a bone or horn point let into and secured to the lever takes the place of this stick. When the pressure is brought to bear, by the weight of the operation, on the long end of the lever, a second man with a stone mall, or heavy club strikes a blow on the upper side of the lever, directly over the pointed stick or horn-point, and the flake is thrown off."

Professor W. H. Holmes, in the Fifteenth Annual Report of the Bureau of Ethnology ('93-'4) devotes one hundred and fifty-three pages to "Stone Implements of the Potomac — Chesapeake Tide-water Province." In this able discussion he illustrates and describes every step in the manufacture of chipped objects from the quarrying to the completed blade. Through the courtesy of the Smithsonian Institution, we reproduce his classification in Fig. 49. Collectors will do well to study it at length.

We have now covered the range of flint artifacts, etc., as well as could be expected in a small and unpretentious work. Of course, there are some forms which resist all attempts at classification. Dr. Rau, of the Smithsonian, coined the very appropriate expression "individual crankism" — merely a whim of the artisan, and not made with any special purpose or design. That is, the aborigine made such patterns as he fancied, out of such stone as he could get,

but would scarcely discriminate against the most easily made and best answering his needs. The bird points, war points, spears or other things may have been used for special purposes, but — it must be remembered that we are referring to the general arrow-heads now — you will find dividing them is like hair-splitting ; a man does not have a different sort of a pocket-knife for every purpose to which such an instrument may be applied.

Flint was essential to the savage ; his very existence depended upon it. While it was seldom used for making fire (the bow drill, hand drill, and sticks serving this purpose) he depended upon it for all the usages named above — in fact it served him as steel and iron serve us.

| NOT IMPLEMENTS | | | IMPLEMENTS | |
|---|--|--|---|---|
| NOT TRANSPORTED | | | CACHE FORMS | TRANSPORTED |
| REJECTS | | | | SPECIALIZED FORMS |
|  | | |  |  |
|  | | |  |  |
|  | | |  |  |
|  | | |  |  |

Synoptic grouping showing origin, form genesis and distribution of the flaked-stone implements of the Chesapeake-Potomac tidewater region. The scale varies from one-third to one-sixth.

Chapter VIII

Grooved Stone Axes

The late Dr. Thomas Wilson, for many years Curator of the Department of Prehistoric Anthropology, Smithsonian Institution, published a number of papers in the various governmental reports. These papers are now out of print. Dr. Wilson understood the arts and life of primitive man and was as well posted on the use of stone implements as any person in America.

We can do no better than to quote his article on axes—published in the *Archaeologist*, October–November, 1895. The illustrations used by Dr. Wilson cannot be obtained and we have made use of other axes to illustrate the types he describes. Several sentences, or portions of sentences have been omitted.

Whether each man (or each Indian) in the Neolithic period manufactured his own implements, or whether there was a division of labor by which certain men with greater dexterity or more mechanical ability made the implements for their tribes, while others busied themselves in the procuration of food for the stone worker at home, can never be positively determined. Possibly both methods were pursued. From the number of styles and kinds of grooved stone axes it may be strongly argued that each man made his own to suit his own fancy, and according to the exigencies of his time, industry and material. We find these axes rude and finished, rough and smooth, long and short, large and small, heavy and light, round, square and oval, with deep grooves and shallow grooves, with grooves on all sides and edges, with grooves only on one side, again only on the edges, and still others only partly in any of these directions.

One grand division in the classification of grooved stone axes, which applies also to polished stone hatchets, and possibly other implements of the same nature, is that they are principally of such stone as is not chipped, but has to be hammered or pecked into

shape. Chippable material like flint and its congeners is employed in Europe for these kinds of implements to a greater extent than in America. We have but to recall the flint hatchets from Grimes' Graves in England and Spiennes in Belgium, all of which have been chipped and not pecked into shape. The largest proportion, 95 per cent or more, of both grooved axes and polished stone hatchets of America are made of non-chippable material, and so has been pecked into shape. While some of the materials used can be chipped, still they do not lend themselves to that process with facility, and it is rarely employed in making polished stone axes, or indeed any other kind of polished implements. The principal materials employed are granite, syenite, diorite, porphyry, argillite, sandstone, indurated clay slate, with a not inconsiderable proportion, in certain localities, of hematite and actinolite. Flint, quartz, jasper, and obsidian are rarely used for these particular instruments.

Another grand division of grooved stone axes are those made from water-worn boulders or pebbles. A rude groove is made in a natural pebble of the desired shape, all or a portion of the way round, and the bitt is ground to a cutting edge, while the original crust of the rest of the boulder is left untouched. The complimentary number of this classification comprises those, by far the greater proportion of the implements, made from quarried material and reduced to a symetric form by chipping or pecking, according as it was chippable or non-chippable material, followed by grinding or polishing.

Another class is where the grooves cross the implements at an angle other than a right angle. In all these the angle of the groove is set so as to bring the bitt of the axe nearer to the handle than is the poll. These seem to follow the rule adopted in handling adzes and gouges. This class comprises but a small proportion of the grooved stone axes and seems to be peculiar to certain localities; 90 per cent or more of the specimens will have their grooves set at right angles or nearly so.

No classification can be made according to the size of these implements. They run from the enormous size of 13 inches long, 7 1-2 inches wide, weighing twenty or more pounds, down to the diminutive length of two inches and weighing but three or four ounces.

Having made these general and somewhat indefinite divisions,

it remains to classify these implements according to their peculiar forms.

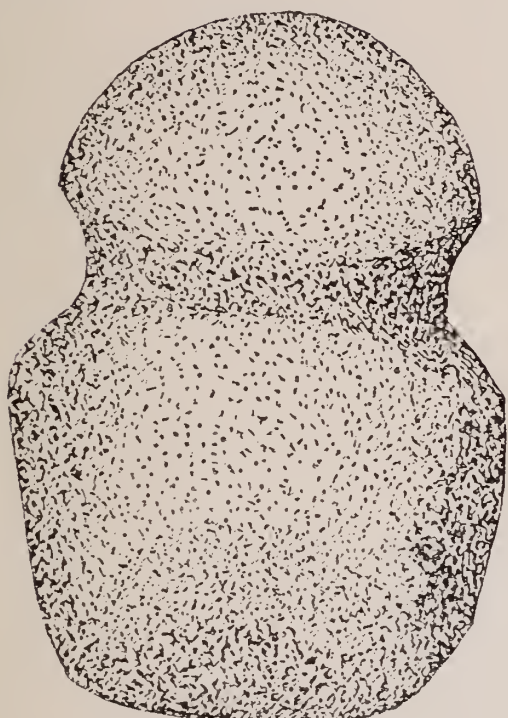


FIG. 50.

GROOVED AXE, VERMONT S. 1-3.

First: The most simple form of the grooved stone axe is that with a rounded head, tapering sides and square edge, with a pecked groove of equal width and depth clear round the implement. This groove resembles that around mauls and hammers. (Fig. 50.) Figures 51-2 are variations of Fig. 50. Fig. 51 is longer than 50, its groove is not so well defined, its poll is larger, its edge narrower. Fig. 52 is shorter than 50 or 51. Its poll is flatter, its grooves deeper. The edges are nearer straight, the bitt is wider. It has a curious top and may be a broken axe made over.



FIG. 51.

GROOVED AXE, BLUE, IOWA.

S. 1-2.

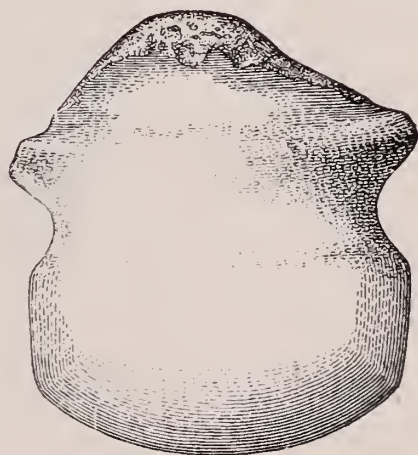


FIG. 52.

JEFFERSON CO., TENN.

S. ABOUT 1-3.

Second: This form is symmetrical on sides and edges; the poll inclines to be more pointed than the first class, but the bitt is much the same. The groove has the peculiarity of projecting ridges all round, producing a deeper groove than it would otherwise be. This, however, is only apparent and not real, for the ridges have been produced by pecking away, abraiding the implement on the poll and edge on either side of and approaching the groove. It will be perceived that this last operation produces a different implement from Fig. 50, in that the making of the ridges has greatly increased the cost of production in both time and labor.

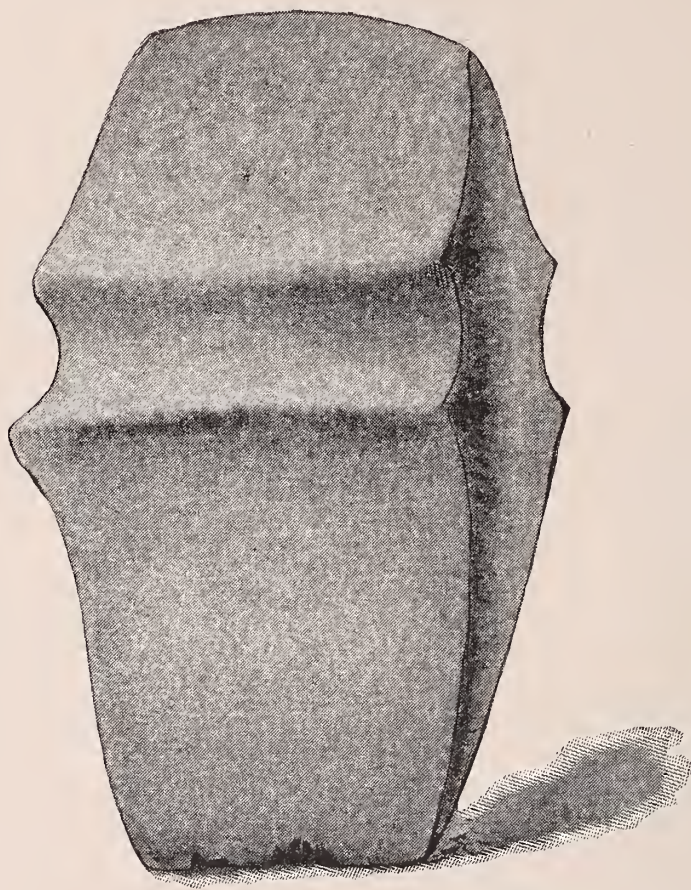


FIG. 53. S. I-2.

Third: This class (Fig. 53) may have the rounded poll and the straight edge of Fig. 50; or it may be more angular. The difference is that the back of the implement, that which comes toward the workman when he is using the implement, is straight or nearly so, from poll to bitt. This back is made flat transversely, as well as

straight longitudinally; indeed, it is not infrequent to find it concave transversely. The purpose of this flat-backed peculiarity is apparently for the insertion of a wedge by which the implement may be tightened in its withe and made firmer in its handle.

Fig. 53 is a grooved axe of very fine workmanship found near Valley City, Iowa. It is of green stone and weighs 6 1-2 pounds. This is an excellent representative of the better grade of axes found in the north-western portion of the Middle South. The back is curved.

The foregoing forms are the commoner, and they furnish the medium sizes and weights. Their average length will be from 5 to 7 inches, with a weight of from 1 1-2 to 2 pound. It is, however, to be remarked that these forms, as well as others, shade away into each other, and the line of division becomes imperceptible.

Fourth : There are a few grooved stone axes with flat sides and edges, square corners and square polls. Usually, the groove is around the front and two sides, and not on the back.

Fifth : Fig 54 represents a class of grooved stone axes remarkable for their length in proportion to their other dimensions. This specimen is slightly flatter than oval in sections, a little straighter on one edge than on the other. With these exceptions it is quite symmetrical. It has been thus hammered and pecked into shape, and with a slight groove near the poll. Its greater proportionate length places it in a new class. Dr. Wilson refers to one found in Wisconsin even larger than Fig. 54. It represents an implement one foot in length. The groove has the projecting ridges of Fig. 53. It is also set at an acute angle and is thus a representative of one of the

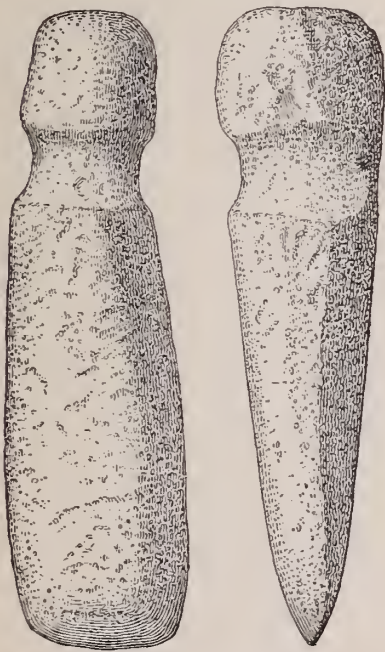


FIG. 54. S. I-5.

grand divisions.

This specimen is an illustration of the statement that the classes of these implements fade away into each other in form and size, making it impossible to draw a hard and fast line between classes.

There are certain other of these implements which have the characteristics of extreme length, and of the groove set near the poll, but with the added peculiarity of longitudinal grooves or flutings down the bitt, fading away in the cutting edge. These flutings are not deep, and sometimes even are only flat and about three-fourths of an inch wide, the axes being three inches in width, four flutings on each side.

Sixth: Double-bitten stone axes, with a groove in the middle and a bitt with cutting edge at both ends and no poll, form another class. They are quite symmetrical, heavy in the center and light in the bitts or cutting ends, with raised ridges on either side of the groove, which, with the groove, extend clear around.

Seventh: Fig. 55 represents a class whose peculiarities are their large size compared with their extremely narrow bitt, the cutting edge being reduced almost to a point. From their similarity to the picks found in steatite quarries, and the fact of the grooved axes having been also found and used in steatite quarries (as recently recounted by Prof. Putnam) combined with the evidence arising from location, it is probable that this class of implements was used for working steatite. The edge is so much pointed that this class of implements could scarcely have been adapted to the general use of cutting or splitting wood. The polls of these implements nearly all show signs of hammering or pounding, as with a maul or hammer.

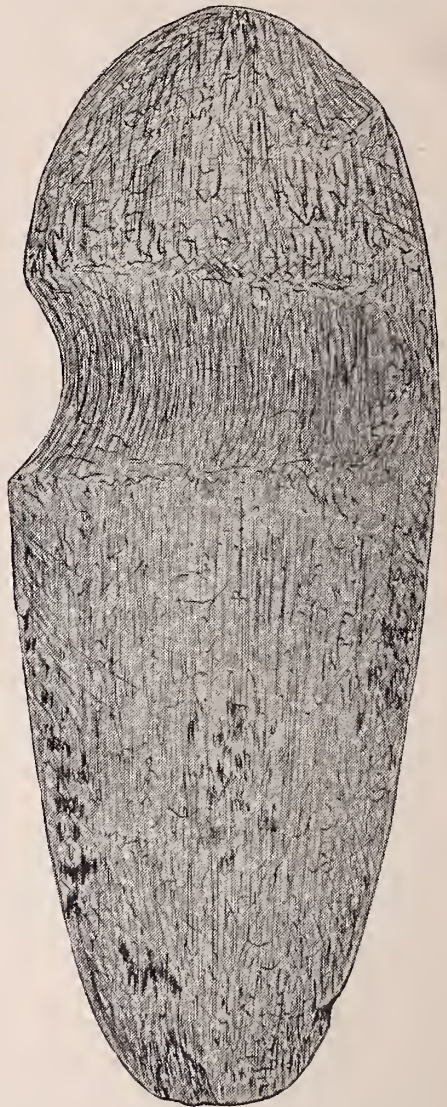


FIG. 55. PHOENIX, ARIZ. S. 1-2

The National Museum possesses a specimen, the largest in the collection, an implement with a groove on three sides, ridges and

flat back as for tightening wedge, but which weighs 20 1-2 pounds, quite too heavy to have been used by the ordinary method of an axe. The edge is blunt but smooth, and it and the bitt are scored with longitudinal striae, some of which are quite profound, as though the implement had been used as a wedge. The poll bears evidences of the pounding or hammering. The implement would serve admirably for the splitting of large logs.

Eighth: Another division can be made of hematite axes. This material is one of the oxides of iron. It cannot be chipped but may be beaten or hammered, if not pecked, but is always ground or polished. Many of the small hatchets of this material differ from the class of implements now under consideration in that they have no groove, but many of them, made from large and apparently natural nuggets or concretions, are found with the groove, by which they can be handled with a withe or thong. Some of these are symmetrical, owing usually to the original form or condition of the nugget, though many of them are of great symmetry and beauty. Mr. A. E. Douglas, of the American Museum of Natural History, of New York, was offered one from Missouri, the largest and finest of its kind in the United States. The finder, having more curiosity than judgment, had broken a large piece out of the bitt with intent to discover the material. Mr. Douglas purchased the axe, but its owner's curiosity cost him more than fifty dollars in the reduced price.

Ninth: The grooved stone axes from the Pueblo country of the Southwest form another class. They are of actinolite, a species of jade.

They are of the variegated colors usual to that material. They pass from pink and jasper through all the shades of blue and yellow, until some end in a deep black. They are of small size comparatively, are usually square or slightly oval in section, have a deep groove and occasionally two grooves near the poll. These have been brought into shape by pecking and afterwards by grinding, and as the material is hard and close in texture, the operation has produced a fine polish. Some of these implements were found by, and are described and figured in the Report of the Geological Survey, Vol. VII, Archaeology where the illustrations done by chromo-lithography give a better idea of their appearance than could any description.

Many of these grooved implements, apparently once axes with bits and cutting edges, have been broken or bruised so that they can be no longer used for cutting purposes. The former edge has been destroyed and the implement afterwards used as a hammer, as is shown by the blunt and battered end, and when the edge was broken it was subjected to a secondary treatment, and was chipped and ground to a new edge. None of the Pueblo actinolite axes seem ever to have



FIG. 56.

AXES FROM SOUTH-WESTERN
COLORADO CLIFF HOUSES. S. 1-5.

FIG. 57. DOUBLE GROOVED
AXE, IOWA. S. 1-2.

been thus treated, although the cutting edge may have been battered until it is three-fourths of an inch in thickness. We have no specimens showing secondary treatment or any attempt at re-sharpening. A peculiarity of these axes is that many of them have two grooves. They are parallel with and close to each other. The purpose of this has never been satisfactorily explained. An occasional axe from other far distant localities shows two grooves. In addition to the

above there are a few forms mentioned by Dr. Wilson but not illustrated. The double grooved axe is exceedingly rare. This one is in the collection of C. J. Beencks.



FIG. 58. TRIPLE GROOVED AXE, IND. S. 1-5.

Axe with three shallow grooves. A rare specimen. Found in Putnam County, Ind. The specimen is 15 inches long, has an average width of 4 inches and a maximum thickness of one inch at the grooved end, from which it gradually tapers to 1-2 inch at the other end, finally terminating in a finely wrought cutting edge. It will be seen from the figure that the upper half carries three grooves, very prominent at the sides, but consisting of slight depressions only across the faces. The top is hollowed or depressed. The sides are beautifully rounded and the entire surface highly polished. The material is ferruginous slate, having a hardness of five on a scale of ten. The specimen is dark olive in color. For what purpose were the grooves or depressions at top? As they show no appreciable

signs of wear, it would seem hardly probable that they ever served to fasten the object to a handle ; on the contrary, we are inclined to think that if, in fact, it represents one form of a spade it must have been used as such without the aid of a handle, that is, with the hands alone. The form and size render it admirably suited to such use. Prof. Emery's collection.



FIG. 59. S. 1-1.

The striated axes found in the St Lawrence region have been described by Mr. C. E. Brown in the *Wisconsin Archaeologist*. This axe is the smallest on record and we reproduce its exact size. It was found in Missouri. Material, granite. Owned by Mr. Sosnovec.

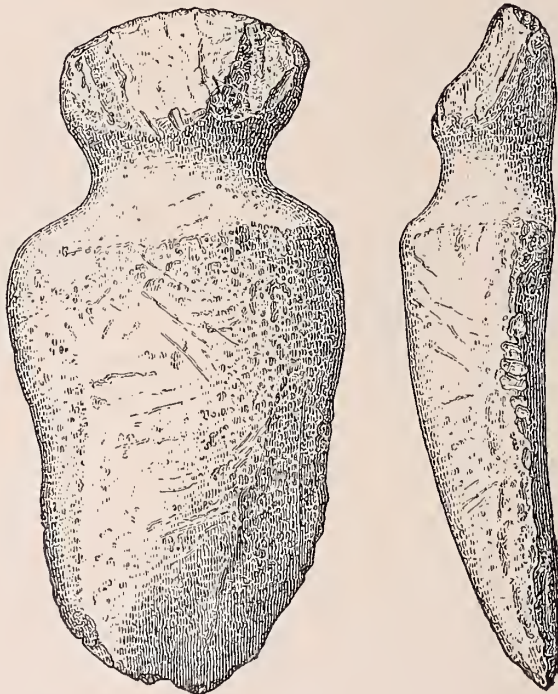


FIG. 60.

Grooved axe made from a curved pebble. S. about 1-3. McMinn Co., Tenn. Described in Mr. Gerard Fowkes' *Stone Art*, Bureau Ethnology. Rep., '91-2, page 71.

"In nearly all of our axes the groove is above the middle, but never so near the top as in western axes. The groove extends entirely around the body of all our axes and is very seldom oblique,

though it is in some cases. On the average the New England axes are six or seven inches long, two thirds as wide, and weigh three or four pounds. None of those that I have seen are polished, none are at all cylindrical as are some of the western axes but all are more or less narrowly oval in cross section. Fig. 61 may serve as very good average type of New England axes. As a rule our axes are not polished, the surface being left as it was finished by pecking. Dr. Williams writes that he has an axe found in Conn. that has a double groove. Most of the stone axes would prove very inefficient tools in the hands of any white man, but there is good reason for believing that, when used by those who were accustomed to them, they were far from useless. In the account of his trip through the lake, which

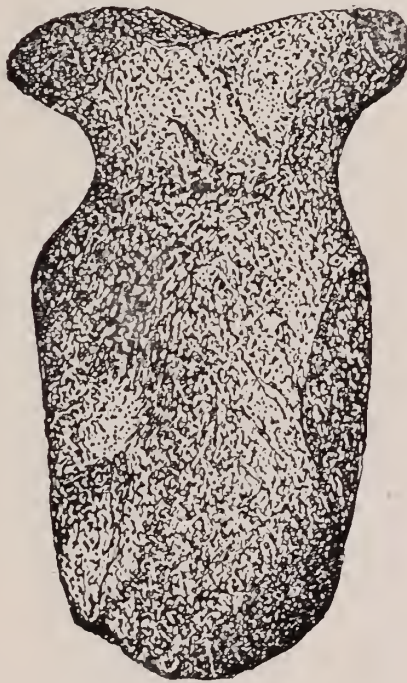


FIG. 61. SIMPLE FORM OF NOTCHED AXE. SHORES OF LAKE CHAMPLAIN.

bears his name, Champlain speaks several times of the use which his savage companions made of their stone axes. He does, indeed call these axes very bad, but he also tells us that when the Indians wished to camp for the night they made a barricade by cutting down large trees with these axes and that they were able in two hours to make so strong a defense that five hundred men could not break through without great loss. Nor did they use fire in this instance,

for Champlain says that when making the barricade they did not kindle a fire lest the smoke reveal their presence to their enemies.*”

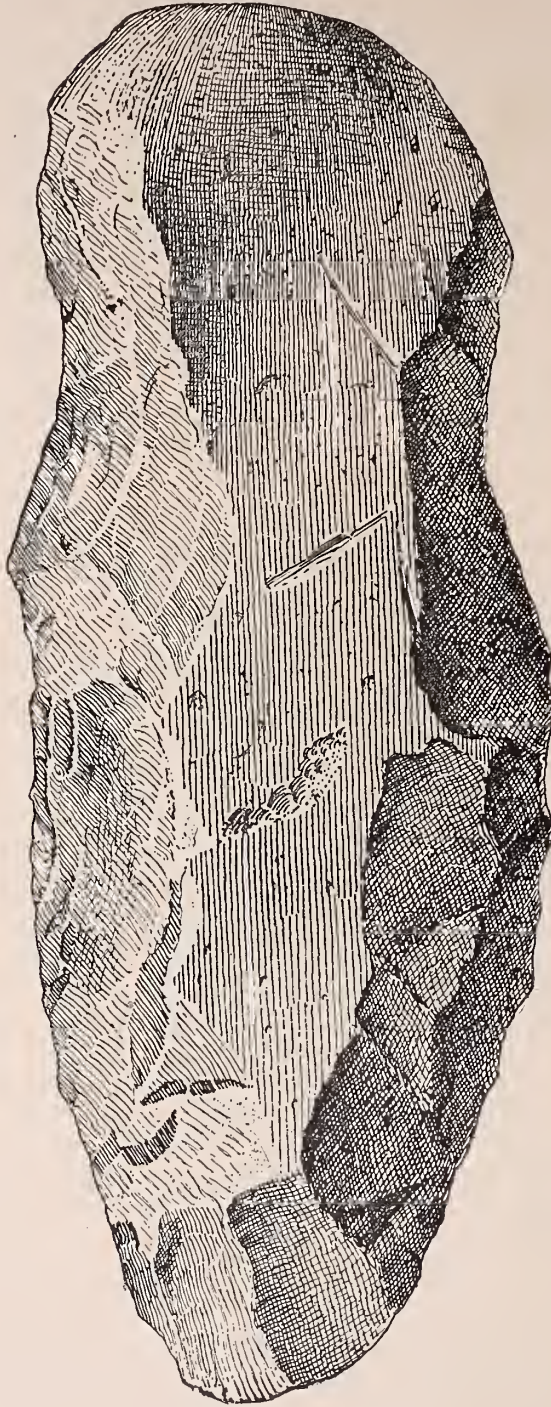


FIG. 62. S. I-I.

Rude notched axe, not polished but chipped into shape by a few blows. Such were doubtless used about the quarries for digging, grubbing up bushes, etc. From the Potomac Valley.

* Prof. Geo. H. Perkins, *Prehistoric Implements*, p. 108.



FIG 63. DOUBLE GROOVED AXE, ILLINOIS. S. ABOUT 1-5.

This interesting specimen is owned by Mr. M. Tandy. A deep narrow cut extends from top to bottom. A celt in the Ohio State University Collection at Columbus is similarly cut.

Chapter IX

Polished Stone Hatchets, or Celts

Of the pecked, ground or polished objects these are the most numerous. Since we have quoted Dr. Wilson on axes, let us give some of Mr. Gerard Fowke's observation on celts.* There is no better posted man than Mr. Fowke on this subject.

"What is true of the uses and distribution of stone axes applies with much the same force to what are called celts — not a good descriptive term, but one which is now given to the implement in lieu of something better. It would appear difficult or impossible to do with these rude tools any work for which we commonly use an axe or hatchet ; and yet, by the aid of fire, or even without it, the aborigines contrived to accomplish a great deal with them.

"The Maori of New Zealand do all their wonderful work of wood carving with only a chisel or adze (of stone or shell).¹ Among the Iroquois, in cutting trees, fire was applied at the root, the coals were scraped away with a chisel, and this process was repeated until the tree was felled. The trunk was divided into lengths in the same way. Similarly canoes and mortars were hollowed out.² The Virginia Indians at an early day employed a similar process. They also cleared ground for cultivation by deadening trees with their tomahawks,³ and used adzes made of shell in cleaning out the charred wood in making canoes. The Nootka of the northwestern part of the continent, in felling a tree use a flint or elkhorn set in a handle, this being struck with a stone mallet.⁴ In hollowing canoes a mussel-shell also is used as an adze, and sometimes fire is applied. The outside is shaped by similar means.⁵

* Eleventh Annual Report, Bureau of Ethnology ; (1891-2) pages 72-75.

¹ Wood, J. G. ; *Natural History of Mankind*, p. 200.

² Morgan, L. H. ; *League of the Iroquois*, p. 358.

³ Beverly, Robt. ; *History of Virginia*, 1722, p. 198.

⁴ Wyth, Hohn ; *Graphic Sketches*, part 1, plate 14.

⁵ Catlin, Geo. : *Last Rambles Among the Indians*, pp. 100-101.

“Stone chisels have been found in various steatite quarries, where vessels and other utensils of this material were made, and the marks of their use is plain both on the vessels in an unfinished state and on the cores, as well as on the quarry face.⁶

“The different ways of hafting, as shown by specimens in the Bureau collection, were as follows :

(1) A hole was cut entirely through a stick and the celt was inserted so that it would project on both sides ;

(2) The hole was cut partly through, and the celt was pushed in as far as it would go ;

(3) The top of the celt was set in a socket of deer horn, which was put into a handle as in form 2 ;

(4) Small celt-shaped knives or scrapers were set into the end of a piece of antler long enough to be used as a handle ;

(5) A forked branch was so cut as to make two prongs of nearly equal length, and the celt was fastened to the end of one, parallel with it, the other being used to guide and steady it, a prong being held in each hand ;

(6) The fork of a root or branch was trimmed so as to make a flat face at any desired angle, to which the celt was lashed, a shoulder, against which the end of the celt was set, being sometimes cut in the wood ;

(7) A stick was split its entire length and a single turn taken around the celt, the ends being brought together and tied, forming a round handle ;

(8) A stick was split part way, one fork cut off and the other wrapped once or twice and tied, thus forming a round handle of solid wood. Forms 5 and 6 were used as adzes ; forms 7 and 8 are the same methods as employed in hafting grooved axes.

“A mounting similar to form 4 is seen in some Alaska specimens of celt-scrapers in which the implement is fastened to a piece of wood so as to project a short distance and used like a plane. In all these, the celt is very firmly fastened to the handle with sinew or rawhide, which, when put on green, contracts with great force and binds like wire.

⁶ Mohr, Smithsonian Report for 1881, p. 618 ; Barber, *Amer. Nat.*, vol. 12, p. 403 ; McGuire, *Ibid.*, vol xvii, p. 587 ; Walker, *Science*, vol. ix, p. 10 ; Schumacher, Eleventh Annual Report of Peabody Museum, p. 263.

“As to the forms of celts, no division is practicable based on anything but their entire appearance.”

Mr. Fowke then proceeds to illustrate a large number of celts, chisels, etc.

The common form of celts need not be illustrated here. In Fig. 69 we have stone knives — perhaps celts — from the south-west — reproduced from Nordenskiöld's valuable work, *Cliff-dwellers of the Mesa Verde*. In Fig. 64 we have the polished celt of southern form. It is the most beautiful of all the celt-like objects, and is always symmetrical and sharp.

Fig. 65 is a flint celt, but so highly polished that it does not belong in the chipped-tool classification. The polishing of flint was a long and laborious process.



FIG. 64.

POLISHED CELT.

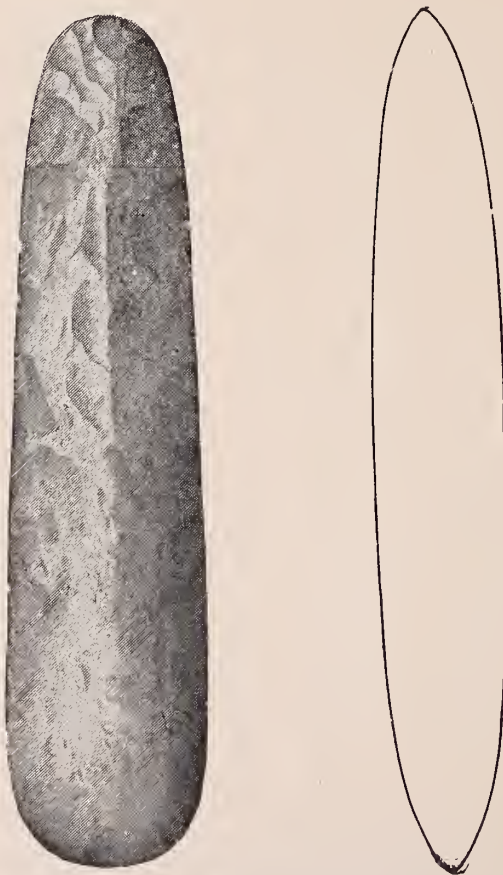


FIG. 65. BENTON CO., TENN.



FIG. 66.

ARKANSAS. S. UNKNOWN.



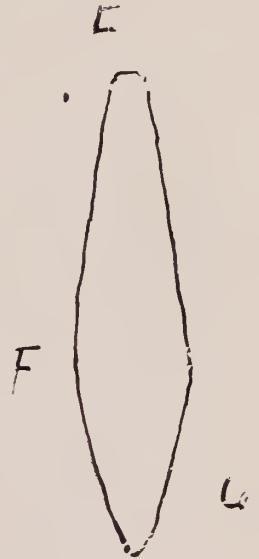
FIG. 67.

S. ABOUT 1-2.

The chisel form, the celt with almost square edges and flat sides are all shown in Fig. 66.

Prof. Perkins says of Fig. 67: "It shows neatly made hand axe, for it is evidently of green porphyry. The labor of working so perfectly finished a specimen from a pebble of so hard a stone must have been very great. Many of these smaller celts were made of attractive material, as serpentine, fine grained granite, compact talcose slate, etc., and there are no handsomer specimens in our collections than some of these."

There are, in addition to those named, a few celts like Fig. 68. E is the top. F is the rounded face. G the back, which is sharply bevelled off near the edge. This form is found in both stone and hematite. Why they were made in this shape no one knows. Certainly it required more work. That the specimen was for a particular purpose no one will deny.



SIDE-VIEW.

FIG. 68. S. 1-2.

In the arid South-west many textile fabrics, cords and other perishable objects are preserved by climatic conditions. Thus we are enabled to study axes, celts, knives, and other things in their original handles.

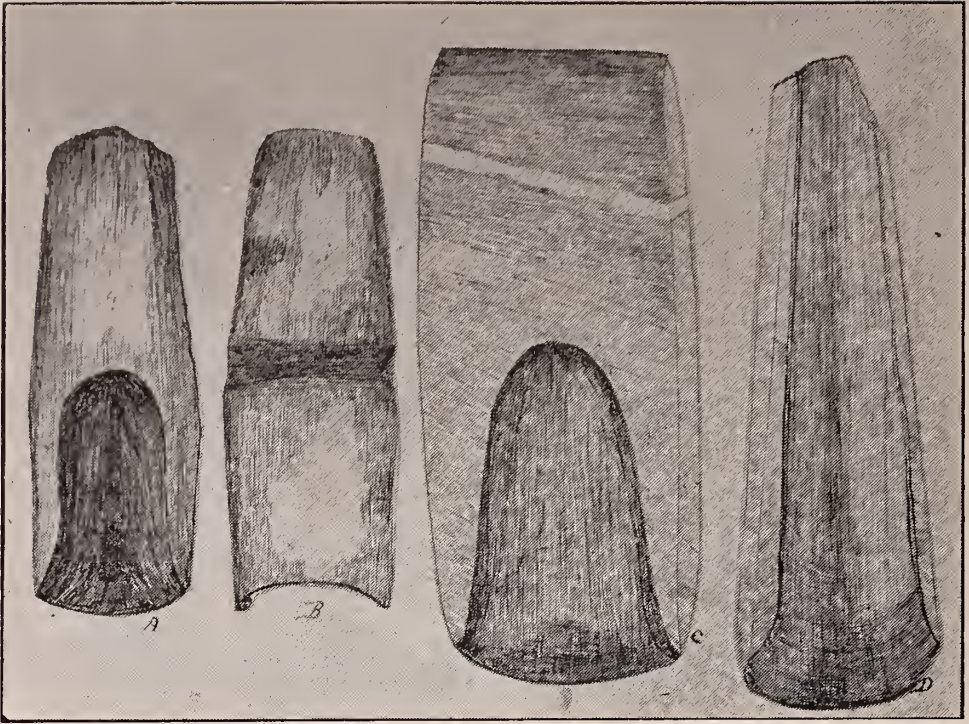


FIG. 69. S. ABOUT 1-4 (SEE RULE).
FROM CLIFF-HOUSES OF SOUTHWESTERN COLORADO.

1. Small point (drill ?) of flint attached by strips of yucca fiber to a stick.
2. Drill point of jasper, with the yucca strips for fastening it to the shaft still adhering to it.
3. Knife of quartzite.
4. Axe in handle. Decorated blade. Handle composed of twigs bent around the axe and bound with strips of yucca and hide.
5. Scraper of flint, with a cotton string bound around it.
6. Sandstone axe in handle.
7. Quartzite knife. Traces of pitch or asphalte remain. Knives were fastened to handles with such substances.
8. Skinning knife of hornstone. Perhaps a celt-like object (curved, polished stone hatchet).
9. A polished stone hatchet or celt. These are frequently found. They are thin and sharp. The eastern type of celt does not occur.
10. Skinning knife of hornstone. The handle was found still attached to the knife, but was entirely decayed. We have reproduced all of these from Baron G. Nordenskiöld's *Cliff-Dwellers of the Mesa Verde*, plate xxxvi.

Gouges

"What are known as gouges, or hollow chisels, are perhaps more characteristic of New England than any other stone implements, for, while they are by no means unknown outside of New England, they are found here in greatest abundance and variety. Certainly no where else does this implement occupy so important a place in collections. Some of the gouges are rude, but usually they are finely shaped and carefully finished. Indeed, none of our specimens excel them in this respect, not even the amulets and ceremonial stones. The material is usually of the best, though it varies greatly in different specimens, some being of hard basalt or syenite, others of softer slates and stones. It is difficult to conjecture the purpose of some of these latter, for the material is too soft to endure hard work and yet the labor which must have been expended upon them is so great that they must have been of importance to their owners. It is also noticeable that some of the most carefully formed and elegantly finished of the gouges were made of the same banded slate



GOUGES. FIG. 70. S. 1-3. VERMONT.

A. Gray, talcose slate. C. Greenish slate. D. Basaltic rock.

which was often used in the ornamental or ceremonial objects and that none of them show any evidence of use. On this account it may be that these finest of our specimens of stone work were not as has always been supposed, tools, but some sort of ceremonial stones. We find no evidence in any of the old writers that such objects were so used, but the character and appearance of the specimens suggest the idea. However this may be, it is certain that most of the gouges were really tools.

“The specimen *a* and *b*, Fig. 70, may have been an adze, the groove across the back being made in order to attach the tool to the handle. The gouges may be placed in two series, in one of which the groove extends from end to end, while in the other it is confined to one end. In most specimens the upper end is narrower than the other or hollowed end, but this is not always the case, as *c*, Fig. 70, shows. This specimen is interesting because it is a combination tool, one end being gouge and the other chisel.”*

* Professor G. H. Perkins, *Prehistoric Implements*, p. 102.

Chapter X

Pestles, Mortars, Mauls and Hammers

With the possible exception of mauls, these are essentially village and camp tools, and, particularly the pestles, were used largely by the women. Of the mauls there is not much to be said, they being in truth large hammers. The mauls are found, largely, in the neighborhood of the ancient copper-mine shafts of Lake Superior, at Flint Ridge (where flint stone was quarried), and in Arkansas around the flint quarry pits and upon the plains of the West. Small mauls have been used upon the Plains, both by modern and prehistoric savages for the breaking of heavy crania (bison) and to shatter long bones. It does not appear that they could have been used in the fashioning of implements, etc., and their use in quarry work or in breaking detached masses of stone marked their limit in that direction.

A dividing line between grooved hammers and the mauls is difficult to establish. The extremes in size are readily recognized, but there can be no rule established. As arrow points gradually merge into spear points, so do the grooved hammers increase in size — when arranged upon a shelf — until they terminate in large mauls. The largest ones are rare and not generally owned by collectors.

Fig. 71. Typical of the North-west and the Great Plains.

Fig. 72. An axe originally; became broken and was made to serve as a hammer.

Hammers and hammer-stones are numerous; particularly the latter. Some of the cupped or pitted stones can be classed with the latter, yet by no means any save those with slight and irregular depressions and those showing unmistakable marks of battering, pounding or pecking. Perhaps there is no better authority on aboriginal lapidary work, and the hammer and its use than Mr. J. D. McGuire,

and to treat of this common and homely—yet interesting—specimen without quoting him would be both an assumption and a slight.* Mr. McGuire studied the types in the Smithsonian collections for some years. Moreover, he experimented with originals as well as with those which he himself made. He became a practical worker in stone, and by his labors he has thrown light upon mooted questions. -

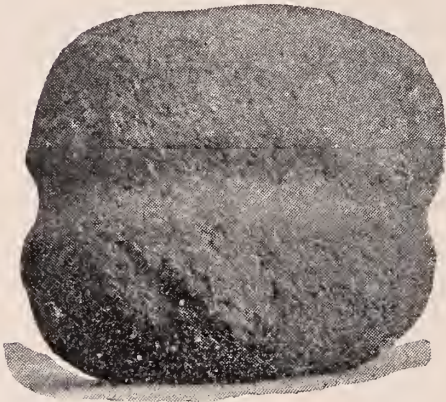


FIG. 71.
PARK RAPIDS, MINN. WINSHIP
COLLECTION. S. 1-2.



FIG. 72. S. 1-2.
FROM A CLIFFHOUSE IN
COLORADO.

“Battering one stone with another is among the first arts that man, even in the lowest stages of savagery, would be likely to discover. If he ate nuts or cracked bones or crushed roots, he would of necessity perform the work by means of placing the object on one stone and crushing it with another. * * * Chipping, on the contrary, is one of the most difficult of labors to perform with success. * * * Experience, as well as a priori reasoning, teaches that the art of grinding and battering stone must have preceded that of chipping. * * *

*American Anthropologist—Vol. IV, p. 301, also Vols. V and VI.

“The battering hammer is commonly a discoidal stone, having a rounded periphery with a pit on each flat surface intended to hold the thumb and middle finger, whilst the index finger is placed on the periphery. The pits are but slight depressions, but are sufficient to prevent the stone from slipping as the blow is given, and at the same time enable the workman to raise the index finger slightly and thus save the jar, which would otherwise in a few minutes disable the arm. The blows of the battering hammer are given at the rate of 200 or more a minute, which would be impossible with the ordinary chipping hammer. With this hammer rapidity is essential, and the blow is ordinarily given to a broad surface, and no deliberation is necessary. Battered objects are numerous and vary greatly in size, consequently the hammer is found to vary likewise. In America it is, as a rule, of quartzite but not always so, being varied to some extent according to the material to be worked. * * * Such hammers appear to have been found all over the world, and from the surface down to the lowest strata of the caves. They are common in the debris of the bottom city of Troy, 52 feet below the present surface, and are also found in the oldest lake dwellings, and among the most ancient remains of all countries. It is probably more generally distributed than any other implement of which we have knowledge.”

Mr. McGuire concludes that the hand-hammer was more relied upon than any other tool. “There is no implement more common among the relics of the stone age, none the uses of which have been less discussed by archaeologists, and more deserving of thorough discussion,” He divides them into two classes, and we cannot improve upon his classification.

“1st. The oblong or flattened ellipsoid having a pit on one or both sides; the pits probably being intended as finger-holds to relieve the index finger from the constant jar occasioned by quickly repeated blows on a hard surface. The periphery of these will often be found quite smooth, at other times rough, according as it has been last used as a hammer or as a rubber, although hammers of hard and tough material, when used on stone of similar character, wear away on the periphery as though rubbed.

“2nd. The spherical implement slightly flattened at the poles, showing a battered and commonly a smooth surface.” He classes

the grooved hammer as another type, intended for hafting, and never as a rubber. He thinks, and truly, that even stone age men were conversant both with the best sources of material and also their adaptability for particular uses. Mr. McGuire was able to manufacture axes and celts with such hammers as have been described.

“The celt or axe, as well as the pestle and the beautiful discoidal, or hammer stones, may be pecked into shape by means of the hand hammer, and its use is apparent on more than one stone pipe.” Of course the polished implements reached their final finished form after a deal of rubbing and polishing. Many of the effigies and large stone objects from Central America, the great metates from the south-west, and the unpolished axes of the Ohio valley show pecked surfaces.

“Ancient man in America was not possessed with iron and steel, nor of other hard metal, yet he fashioned discoidal stones, ceremonial weapons, animal pipes and figures with stone hammers, any of which required more delicate manipulation than did the Egyptian statuary of antiquity. * * * The contention in favor of the use of iron and steel or bronze in fashioning celts or statuary of diorite cannot be maintained. The stone hammer, in part of the world at least, was used in shaping tools and figures of stone. Is it not a permissible inference that this was the carving tool, not only of the age of stone, but through it to that of bronze, and even to a later period, until iron came into comparatively common use? Then, and then only, would stone begin to be supplanted by the iron carving tool and sculpture show signs of advance; even then, however, first in the softer stones.”

It behooves collectors not to cast aside these hammer stones, whether grooved or ungrooved, but on the contrary to carefully examine and study them.

The pestle to the left was made from a peculiar shaped pebble. Its form has been further changed by holding it in a certain position while grinding. Thus one side has worn away more than the other. The pestle to the right is unusually short. It may have become and was then ground down.



FIG. 73. OHIO VALLEY. S. 1-2.



FIG. 74. PARK RAPIDS, MINN. S. 1-2

Typical bell-shaped pestle. A little better than the average.

Pestles may be divided into several classes or sub-divisions. The upright or bell-shaped, the roller or elongated form, and the round ball which, while not pestle in form, beyond question performed the office of a crushing, bruising or grinding stone. The bell-shaped is most widely distributed and is numerous in the entire Mississippi Valley north of Memphis. (We would except portions of Missouri and Arkansas in this statement.)

Some of these are exceedingly well wrought, polished, and present graceful and symmetrical curves. The top is occasionally enlarged or surrounded by a ridge, and just below this the body is narrowed; then it suddenly flares out and terminates in a broad, flat base. This type is as beautiful as it is rare. Common bell-shaped or pear-shaped are short and clumsy — mere cones, with flat bases for grinding. None have ever been found in mounds, to our knowledge, save in one instance. The roller type is common south and fairly numerous north. Very few are well polished and wrought with care.

Few of the cone or pear-shaped pestles have been found in the south-west. The natives there use the metate and mano stone or the elongated roller pestle in a deep mortar. The mortars and metates are very large and in point of workmanship surpass anything found elsewhere in the United States. Sometimes the metates have carved legs and are inclined — one end being higher than the other. The polish and finish on some of the south-west and Pacific rollers is simply marvelous. Heads of certain ones indicate phallic worship; others are carved. Bases of some are enlarged. Some even exceed thirty-six inches in length and are tapering. Seldom do Mississippi Valley forms reach twenty-five inches in length. The average is twelve inches. For the bell-shaped forms the range is from three and one-half to nine inches; average, five and one-half inches.

Many pear-shaped pestles show a wearing away at one side as if held in one position while being rubbed upon a stone or wood surface. Others have slight pits or depressions in the center. How there are formed we are unable to state. The pits are usually polished. Pestles do not indicate an agricultural people exclusively. Not only was corn ground with them, but also nuts, seeds, roots, etc. The rollers and mano stones of the southwest, and receptacles in

which they were used, belong chiefly to Cliff and Pueblo peoples, who were, we know, largely agricultural. Several of our mound-building tribes of the central Mississippi Valley region also devoted more or less time to agriculture. But of the vast body of natives we can only affirm that they were principally hunters, fishers and trappers, searchers after wild fruits and nuts, and that their wretched patches of corn and beans afforded a small and uncertain supply. We can, therefore, hardly dignify these tribes with the term "agriculturists."

Pestles and hammers, in many instances, filled the same office. The wants of a savage, or a barbarian if you please, are simple, and he is not supposed to have discriminated in the choice of his implements. The tent pegs could be driven as easily and effectively with a natural stone as with a fine grooved hammer. A bowl of edible roots can be crushed with a round stone or smooth pebble as readily as with a pestle. For special grinding, making meal, etc., the pestle was needed. The roller did a work for which a round pebble or ordinary rough pestle would be totally unfitted.

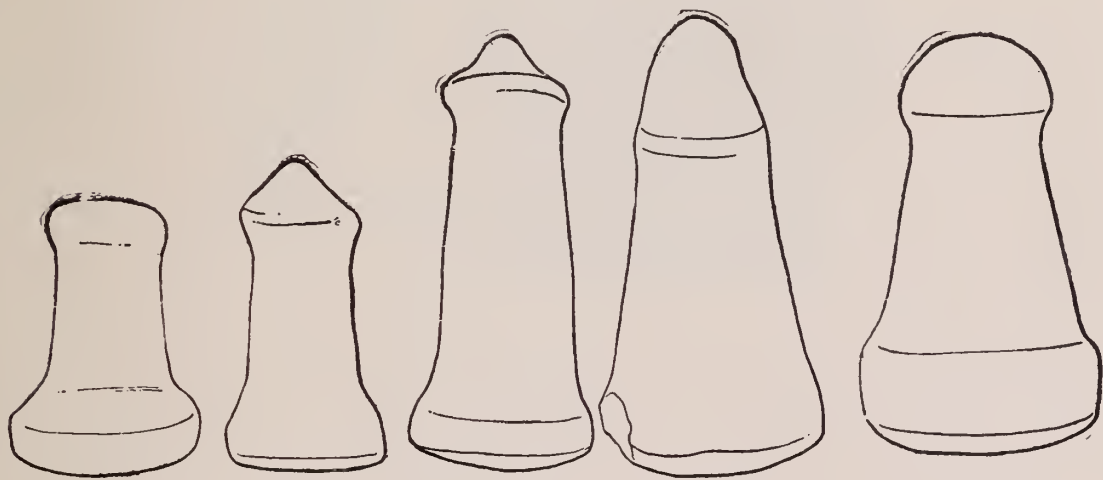


FIG. 75. OUTLINES OF PESTLES FROM FRASER RIVER SITES. S. 1-4.
COLLECTED BY PROF. H. I. SMITH.

Collectors attempting to secure all the types named must resort to exchange or purchase, as in no one section of the country did the

aborigines employ them all. The long rollers of the Pacific coast and mano stones and metates of the southwest can be had from western collectors in exchange for eastern types.

The California and Northwest Coast forms are more elaborate than those found elsewhere in North America. Of the elongated pestles much might be said, but space forbids. Sometimes effigies or totems are carved on one end. These pestles were highly prized by the natives and passed from father to son.



FIG. 76. CALIFORNIA. S. 1-7.

Mortars such as this are common, but there are stone ollas and more elaborate mortars.

As to the methods employed in grinding corn, grains, nuts, etc., more than the simple rolling process were in vogue. Fig. 76 A represents a possible use of the heavier form of roller-pestle.

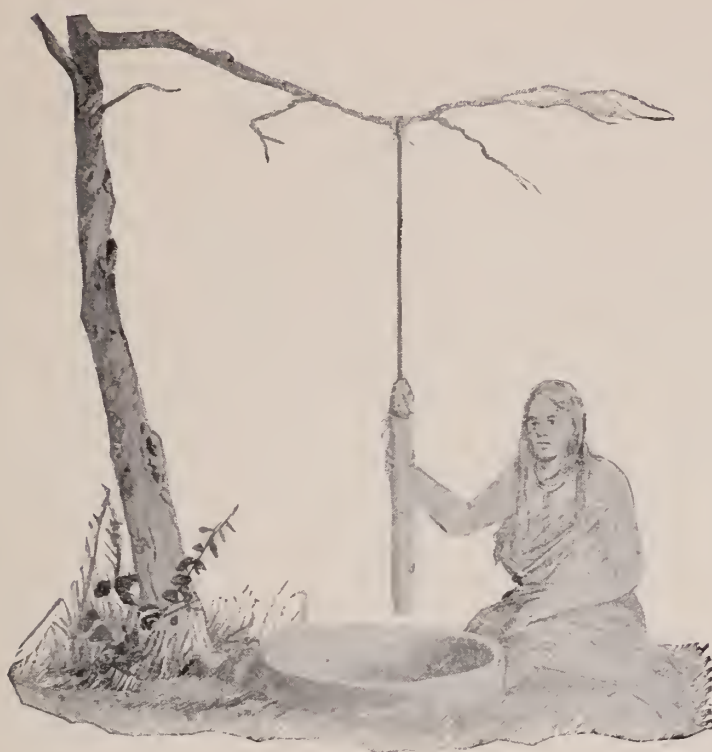


FIG. 76 A.

Woman using a roller pestle (sketch after Schoolcraft). The spring of the tree-limb greatly facilitates her work.

Chapter XI

Slate Ornaments and Ceremonials

In casting about among the authorities on these peculiar specimens, we find articles in the *Archaeologist* and *Popular Science News*. Most of them were written by Mr. Moorehead, but he mentions the fact that he was aided by Messrs. Fowke and Berlin. We reproduce part of his articles printed in August and September 1902 in *Popular Science News*.

Fig. 77. a — The large, oval ornament. Common.

b — The long ornament with square corners. Not common.

c — A modification of form a.

d — “ “ “ “ “

e — The boat-shaped ornament. Flat on one side, convex on the other.

f — A very rare form of ornament. More properly an “unknown.”

g — An unfinished e form.

h — Common ornament or pendant, one perforation. More of this kind are found than any other ornament type.

i — A broken or unfinished ornament.

j — A modification of form h.

k — Large, broad ornament, one perforation.

l — Large ornament, indented sides, one perforation.

m — Ordinary form.

n — Unusual form, may be a broken one re-made.

o — Same as e.

p — Fairly rare form, Interesting.

q — Common double-perforated form.

r — “ “ “ “ “

s — Rare form, raised back and rounded edge or face.

t — Slender form. Not common.

In the center very narrow pendants, which are rare, and two tablet-shaped forms. The tablets are more often found in mounds.



FIG. 77. S. ABOUT I-5.

COLLECTION OF MR. E. I. GUTHRIE, INDIANA.

Nearly all the kinds of ornaments are shown in Mr. Guthrie's mounting. Two more types are presented in Figures 78 and of the smaller one (Fig. 79) a great variety exists, ranging from a small ear-pendant to irregular fragments of slate or other stone. They may be finished or not.



FIG. 78. S. 1-3.

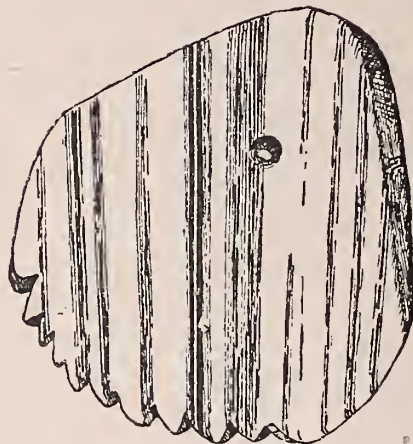


FIG. 79. S. 1-2.

Fig. 78. Cannel coal ornament. Found in a gravel pit alongside of a skeleton. Lima, Ohio. Ohio State University Collection.

Fig. 79. Peculiar pendant. Cuttings are at right angles to the grain. Oxford Co., Ontario.

“With the exception of the finer pipes there is no class of relics that appeals to the collector, especially to the amateur, as do the beautiful specimens that must be considered ornamental or emblematic in character. They run through a wide range of form and material, though most of them are of the finest or most beautiful stone that was accessible to their fabricators. Many attempts have been made at a classification of these relics, but all have met with the insuperable objection, that, with very few exceptions, we are entirely ignorant of the uses to which they were put, and consequently, have no starting point from which to extend our system of nomen-

clature. Even an attempt to name a few of the simpler forms presents a difficulty almost at the outset; for the different patterns graduate into each other imperceptibly, and there is no certain line of separation between specimens, which are, at first glance, entirely distinct from one another.

“For example, as little as the flat, rectangular gorgets and the thin, hollowed, boat-shaped stones resemble each other, there is no possible graduation between the two shapes that may not be found in any tolerably well equipped museum. Even the cylindrical tubes and the thin, shapely butterfly banner stones may form the extremes of a series that shade into each other so insensibly that it is impossible to say where the one shape begins and the other ends.

“A multitude of names have been invented by various authors under which they have attempted to bring hundreds of different things into one general system, but most of these terms are, and must be misleading in their character; for, as a rule, we have no means of knowing to what use the specimens were put by their makers. To call the flat, perforated stones gorget, because they are frequently found on the breasts of skeletons, and therefore probably answer the purpose for which such things have been worn in recent times, may be correct; but we have no warrant for saying that it is correct. We do not ourselves now make or use things so similar to the relics of our predecessors that we can classify our collections in the light of present knowledge; we cannot even say what we would probably do with such articles if we made them, because we do not make them, and for the most part, never have made anything like them.

“It would be a great help, not to collectors alone, but to the science of archaeology, if some one competent for the task would establish an arbitrary system of nomenclature for all these things whose use is, and no doubt always will be, unknown. Such a method would be no more inexact than that which we are now compelled to use, and would at least have the merit of enabling one to understand to what an author referred when he used a particular term for a particular specimen or type. We do not have this knowledge at the present time, for every writer on the subject has his own way of designating whatever he wishes to describe, and thus we may have the same name given to two things that are entirely different, or have names not at all alike given to identical pieces.

“Unfortunately, the perfect specimens that may be classed as ornamental, are very rare; the material of which they are made is nearly always quite brittle, and the specimens are worked down to the last degree of thinness. Consequently, even if they may have been complete when lost or deposited with a body, the fragile substance of which they are made almost certainly ensures their breakage by the pick of the digger, the hoofs of stock, or the implement of the farmer. It is very seldom that a good specimen is to be found on the surface, and they are not much more common in graves. Broken, imperfect, or unfinished pieces, however, are very abundant, and for the purposes of the student are as valuable as the more perfect ones—oftentimes more so, for there is less difficulty and expense in getting them.”

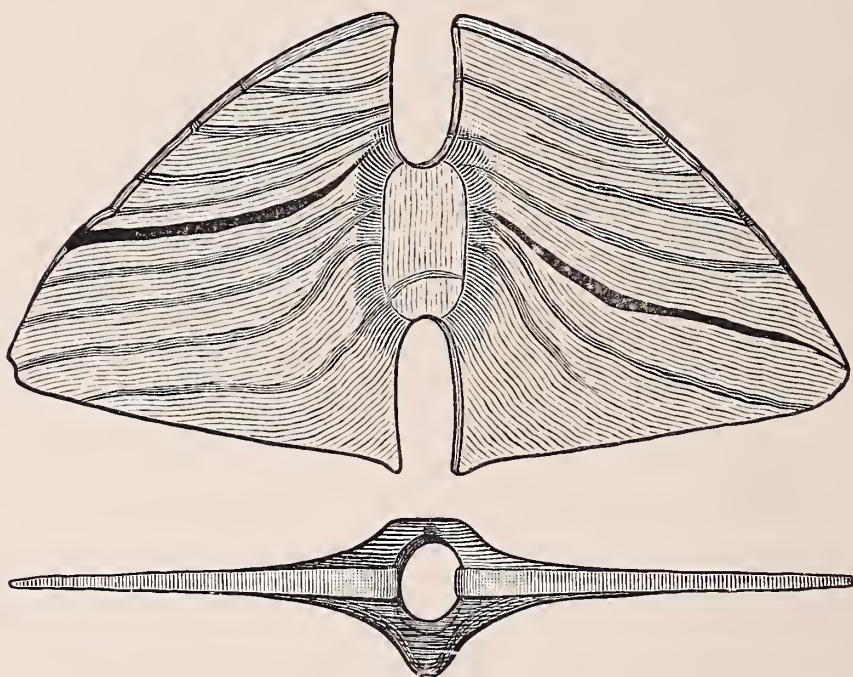


FIG. 80. S. 1-2. BUTTERFLY CEREMONIAL. REDDISH-BROWN, PURPLE SLATE. VERY DARK STREAKS. MILWAUKEE PUBLIC MUSEUM COLLECTION.

Pendants — This term may be applied to almost any of the articles under discussion, but we propose to limit it here to the small, flat, rectangular specimens usually made of slate, and having a single perforation near one end. When found with skeletons they are

almost invariably upon the breast, and the marks of wear about the perforation show that they were hung around the neck.

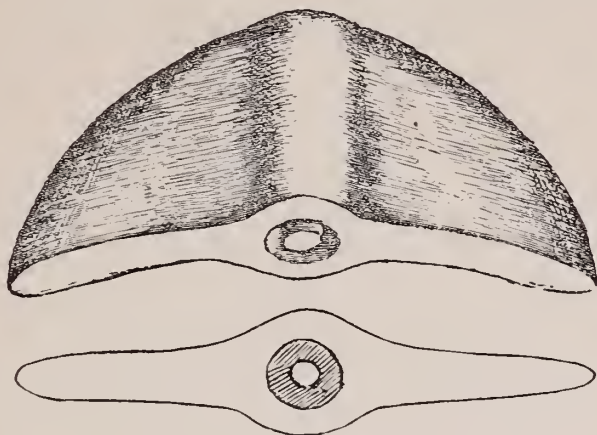


FIG. 81. S. 1-3. UNFINISHED BUTTERFLY CEREMONIAL.
EASTERN TYPE. ELLINGTON, N. Y.

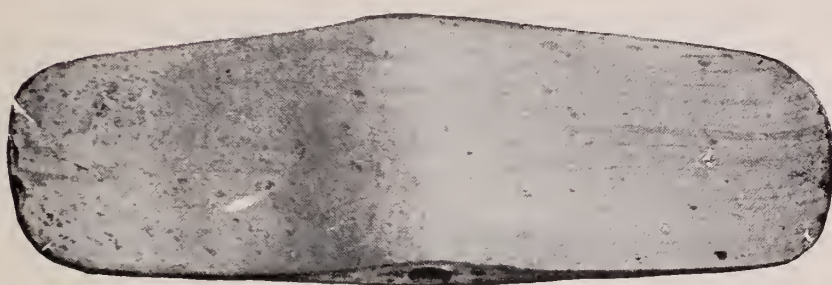


FIG. 82.

CEREMONIAL, SIZE AND LOCALITY NOT GIVEN. PURPOSE UNKNOWN.

Tablets or Gorgets — These are flat, generally four sided, but not often rectangular, being sometimes wider at or near the end, or having the sides curved either inwardly or the reverse. Often they are rudely decorated with incised lines which seem to have no special meaning.

Chapter XII

Ceremonials; continued

The most singular of all ornamental or ceremonial objects is the butterfly or banner stone. The word banner means very little; butterfly is much more appropriate to their form. There are few whole butterfly ceremonials throughout the United States. Nearly all of them are broken. Not one of the best-informed archaeologists can tell you positively regarding their use. Dr. Wilson once gave the following explanation; and while it is largely theoretical, yet it is as plausible as any advanced. He said that in prehistoric times he believed that each clan or tribe had a special totem or coat-of arms, as it were. He said that as catlinite was a stone used among the tribes in historic times in pipe-making; and that as it did not date back more than one hundred years before the discovery of America some object or some material must have occupied its place; that at the time of La Salle's discovery of the Mississippi a large catlinite pipe was used by De Tonty as a symbol of peace and that whenever he exhibited it in descending the Mississippi, the symbol was both understood and respected. The authority said that this butterfly ceremonial was possibly used in prehistoric times as an emblem of peace, or as a mark of distinction observed by all the tribes of the Mississippi Valley. It could not be maintained, he said, that these ceremonials were used exclusively by a single tribe. Those of West Virginia, of Ohio, of Kentucky, of Illinois, and of Michigan are more or less alike, and the other village materials of these localities are vastly different. The type is very widespread, and therefore he would attach special significance to it. This was his opinion: and the readers may accept or reject it.

Now the butterfly form as shown in Figs. 80 and 81 may be the highest, but there are kindred types. Note Fig. 83 for instance.

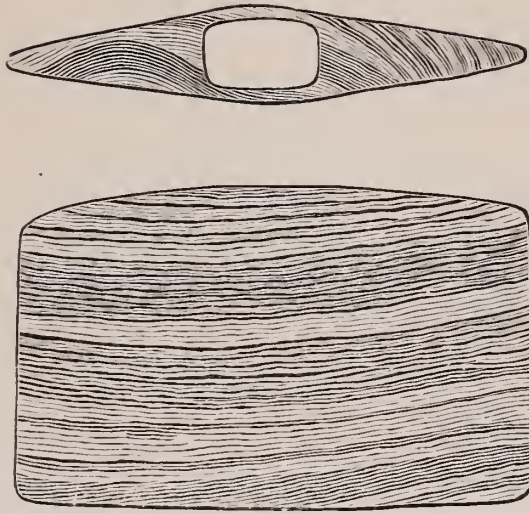


FIG. 83. S. I-2. SOUTHERN WISCONSIN.

And after the butterfly we have the curved forms, the crescents and others.



FIG. 84. S. I-2.

The six objects from the collection of James Wier, Iowa, are very rare.

a—Ornament with fluted ends.

b—Rare ceremonial (?) perforated, curved and having a broad, sharp blade-edge.

c—Unknown ceremonial.

d—This object is of pyramid form perforated through like a “butterfly ceremonial” and also perforated from upper to lower surface. The archaeological wise men of the museums will have to name it.

e—A long ornament, very nicely made.

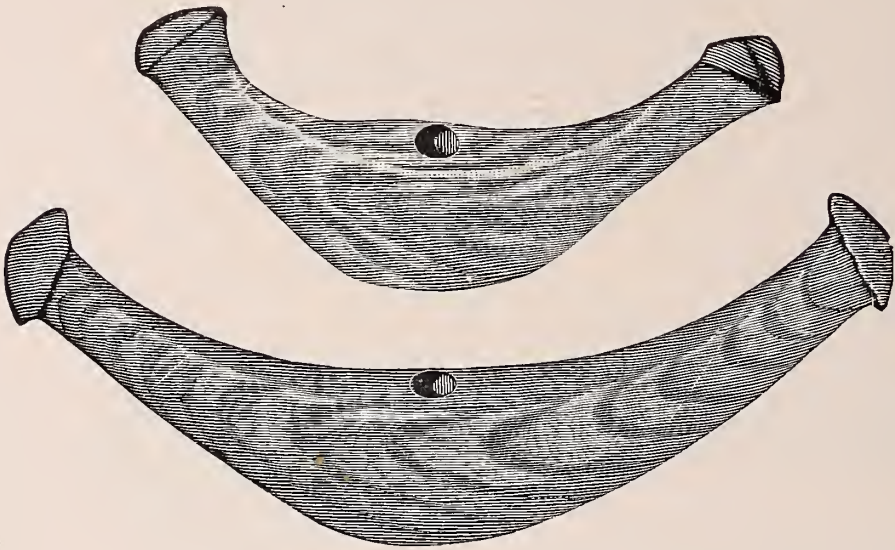


FIG. 85. S. 1-2.

Fig. 85. From Central Canada. Reproduced from : “Notes on Primitive Man in Ontario,” by David Boyle, Toronto. 1895.

In regard to the great number of forms that are usually denominated “ceremonial” or “ornamental” objects, the descriptive name must suffice as explanation of the purpose for which they were made. If, at some distant future time, a person entirely ignorant of the rites and observances that are practiced in the secret societies of the present day, should stumble on a deposit containing all our various badges, insignia, tokens and emblems, and should learnedly endeavor to construct from them a theory as to the system of religion of which they were the tangible evidences, it is possible that his monograph would not be much nearer the mark than some that have

appeared in explanation of what is indicated by the prevalence of such things among the Indians or other uncivilized tribes.

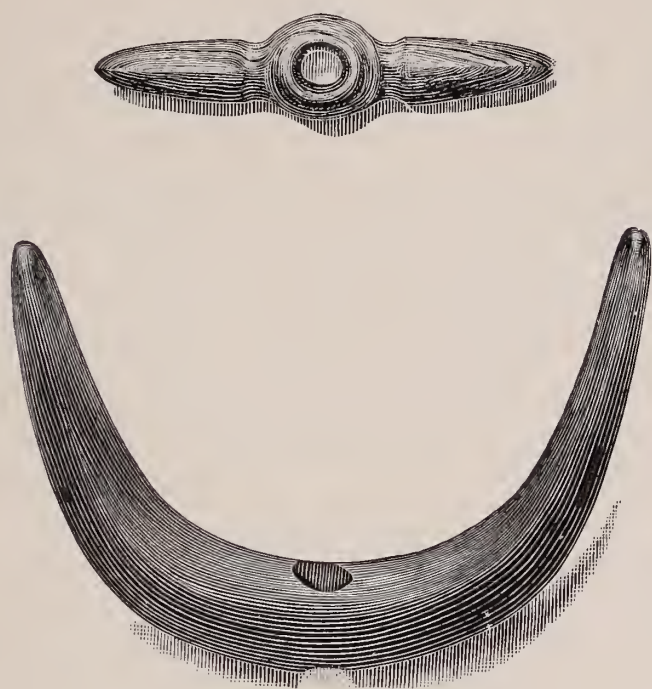


FIG. 86. S. 1-2.

Fig. 86 presents two very interesting specimens from the collection of Mr. Leslie W. Hills, Indiana. These are both of slate and were found in Indiana. It is suggested that the perforated crescents were worn upon the head in imitation of horns. This theory may be correct.

Tubes—These are usually of slate, though many are found of sandstone, and, very rarely, one made of quartz, or similar hard stone. The preference seems to have been for a material that was susceptible of a high polish. As a rule they are cylindrical, though some have one side flattened or even grooved. They vary from an inch to six inches in length; the majority, however, being less than four inches. The drilling was effected by means of a stick or cane, with sand. Unfinished specimens occur with a small core, showing the use of a cane or reed as a borer; in others the hole ends in a depression that proves the use of a solid stick. It is often stated that water was supplied with the sand, but this is a mistake, as by the

action of the water the stick would soon become soft and wear rapidly, thus clogging the cavity and retarding the work. The drill may have been revolved between the hand or the bow may have been employed. Of course two persons would be required to drill the longer or thinner specimens—one to work the drill, the other to steady the stone and direct the point of the instrument.

The banded Huronian slate was a favorite stone for this, as for other forms of ornamental appendages. It is soft enough to be easily worked, takes a good polish, and some of the pieces are really beautiful in their variegated markings. Tubes were used among the Plains Indians (according to Catlin and Schoolcraft) by the medicine men for sucking evil spirits and disease from the bodies of the sick. Catlin goes into considerable detail regarding such practices of the Mandan doctors. Suppose a person ran a thorn into his foot and the sore had festered and become so inflamed that the subject was confined to his tepee. The doctor, having previously provided himself with a grub worm, a cricket, or some other insect would visit the patient and carry out, in the presence of the family, numerous incantations and ceremonies. As a last resort he applied the stone tube (which he drew from his medicine pouch at the proper moment) to the wound, and after much gesticulation, he would spit out the grub or cricket which he had previously concealed in his mouth. Of course, the family supposed that the worm was the evil spirit causing the disease.

Since the tubes found generally throughout the Mississippi Valley are of the same form as those used among the Plains Tribes of historic times, it is not improbable that they were put to similar purposes. Many of them no doubt served as pipes, a stem being made of a small reed, hollow stick, or bone from the wing or leg of a bird. Others show at their end the marks of a cord by which they had been suspended, presumably from the neck of the owner. They have been called whistles, but such use is improbable, for any boy can emit a much louder and shriller whistle through his fingers than can be coaxed from one of these tubes.

Odd Forms—There are pick-shaped ceremonials, short stone tubes called beads, coffin-shaped stones, plummets, and a host of other varieties whose functions cannot even be guessed. There are broad objects of slate, drilled through the center and sharpened at each

edge; these have often been called double-bitted axes, although not one of them could serve as an axe.



FIG. 87. S. I-I.

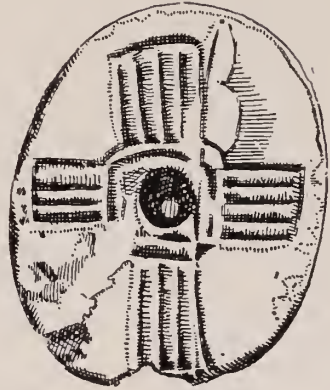


FIG. 88. S. I-I.

Fig. 87. Side view of a decorated "spool". Use unknown. Found near Ripley, Ohio.

Fig. 88. End view of a "spool".

Fig. 89. A. Rough stone mortar. Some shell beads — disc form — are shown in the mortar.

B. Long celt of southern type.

C. Short celt with edge abruptly bevelled off.

D. Broad cone-shaped stone (convex above, flat underneath).

E. Just above the round stone (d) and near the corner of a celt is a typical ceremonial.

F. A rude quarry axe or digging tool, grooved around the center. This type forms a connecting link between the notched axes and the rougher grooved axes.

G. A typical grooved axe.

H. One of the grinding or polishing stones mentioned by Dr. Steiner as common.

I. A good specimen of a stone cup.

J. Small, common celt, highly polished.

K. Typical southern axe. No great difference in form between axes G and K. To the left of K is a very large spear-head. The original of this must have been nine or ten inches long.

m

n

o

p

a

b

c

e

f

FIG. 89. S. 1-5.

g

h

i



COLLECTION BY MR. GEO. WILLIAMSON, OF TYPICAL LOUISIANA AND MISSISSIPPI IMPLEMENTS.

L. Type of jar common in the South. Somewhat different from the Missouri and Tennessee forms.

M. Peculiar wedge-shaped celt, the sides and top being squared.

N. A discoidal stone is shown to the left of the celt, and to the right and just below is a common form of southern pipe.

O. A peculiar flat stone, perforated.

P. A decorated jar. Below specimens O and P is a long effigy pipe.

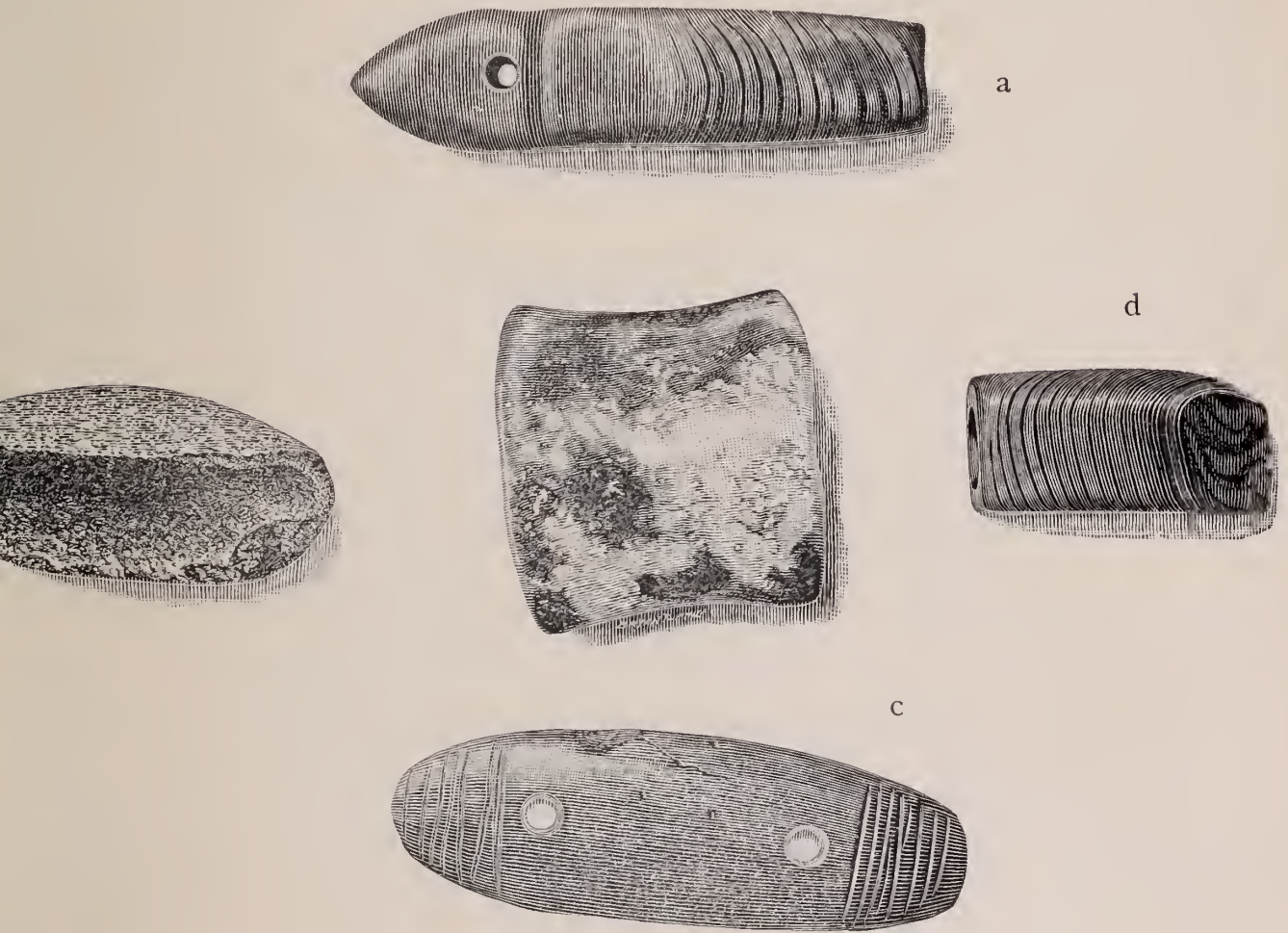


FIG. 90. S. 1-2. THE JAS. WIER COLLECTION.

A. Long ornament, one perforation and grooved. Unknown.

B. Boat shaped ceremonial of granite.

C. Ornament with lines cut across each end.

D. Tube-like stone, unknown.

In the center, typical Middle South banner-stone of white and pink quartz. Perforated. A fine object.

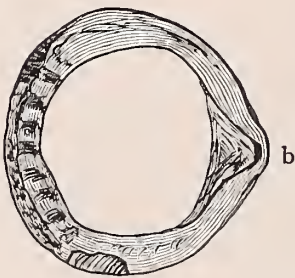
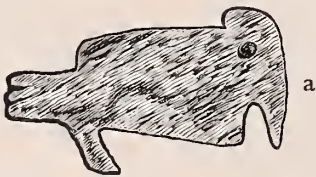
Chapter XIII

Shell and Bone Ornaments and Implements

These objects were small and made, more or less, of perishable material, therefore they are seldom found except on village sites, or ash pits or in the mounds and graves. The subject is an interesting one, although the study of shell and bone objects has been sadly neglected by collectors.

In the South-west, shells are used for a variety of purposes, the natives procuring many kinds of ocean shells from the Gulf of California and the Pacific Coast. It is easy to distinguish between shell objects of one portion of the United States and of another. But the bone awls are naturally more or less alike. Bone was not so universally used for ornamentation as was shell.

The illustrations presented, while somewhat inadequate, will give our readers a slight idea of the extent of this class of pre-historic relics.



- a — Bird effigy of shell.
- b — Finger ring of shell.
- c — Shell ornament.

It should be observed that *a* (by error) is shown twice the size of the original. The ring and shell pendant are full size.

FIG. 91. S. I-I. PHOENIX RUINS.

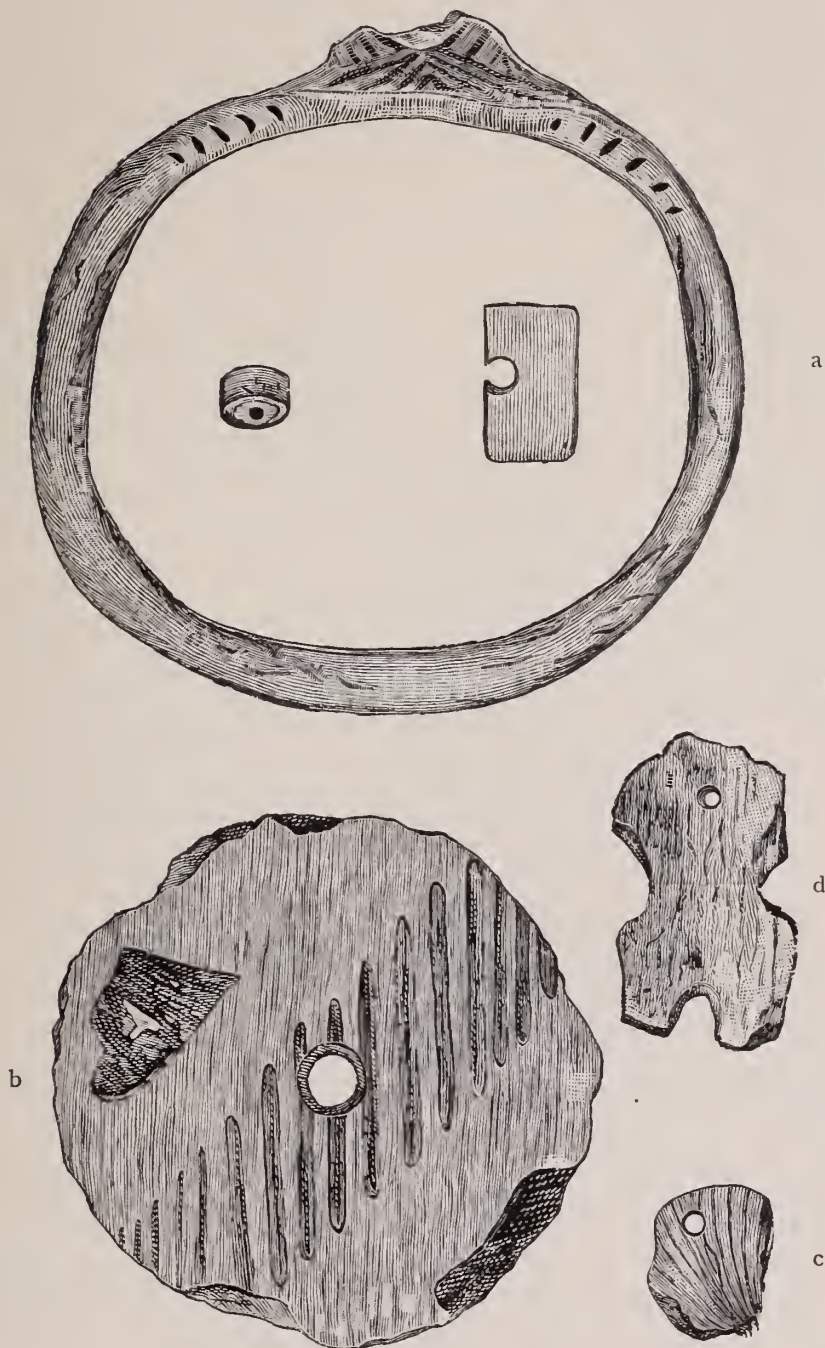


FIG. 92. S. I-I.

a — Shell bracelet. Within it are shown two turquoise beads.

b — Pottery disc, perforated.

c — Shell ornament.

d — Slate ornament.

All from desert ruins near Phoenix, Ariz.



FIG. 93. S. I-2.

Fig. 93 presents three typical bone awls from village sites, two fish-hooks, an arrow-shaped ornament of bone and two large shell ornaments. The shell ornament to the left is a rude imitation of a human face. In the South much more elaborately carved shells are found. They portray the human figure, the rattle-snake and other life-forms as well as cosmic symbols.

a

b



f

g

h

FIG. 93A. SHELL AND CLAY OBJECTS FROM STONE GRAVES, TENN.
S. ABOUT 1-6.

a, is a typical cooking bowl, 4 handles.

b, a small bowl; the bottom is pointed instead of rounded.

c, an artificially shaped human cranium. (Some of our tribes compressed the skulls of infants.)

d, an engraved shell.

e, an engraved shell or mask with perforations.

f, a string of large bone beads.

g, a very finely carved shell.

h, a clay ladle. A long bone awl is near it.

i, a long string of small beads.

j-d, shelf. A long bone awl, a pipe, 3 engraved shells and 2 shell pins. These latter are common in the middle South, and were hair-pins.

k-c, shelf. Some interesting pottery of rather old form. At k, double bowl.

The southern heads are much larger than those of other sections.

Fig. 94 shows 24 shell beads or small ornaments from various portions of the United States. The illustration (a composite made up of several figures) is taken from *Art in Shell of the Ancient Americans*, by Prof. Holmes, Bureau of Ethnology Report, '81.

No. 1. Mound, Lick Creek, Tenn. Common from the Mississippi to the Hudson.

No. 2. Santa Cruz Island, Cal.

No. 3. Mound, Prairie Du Chien, Wis.

No. 4, 9. Mound, Sevierville, Tenn.

No. 5, 6. Cal., New Mex.

No. 7. Grave, Lynn, Mass.

No. 8. Northwest Coast.

No. 10. Mound, Southern Ills.

No. 11 to 15. Mounds, Tenn.

No. 15. Maryland.

No. 16, 20. From various localities.

No. 21. Mound, Cocke Co., Tenn.

No. 22. Pacific Coast.

No. 23. Arizona.

No. 24. A fossil used as a bead.



FIG. 94.

Fig. 95 is from the collection of Mr. James Pillars, Ohio. It was found in a mound, Mercer Co., Ohio. There are three perforations. It was cut from a large unio shell. Mr. John N. Hodgins, of Indiana, found some fifteen or twenty shell ornaments like this one in a grave.

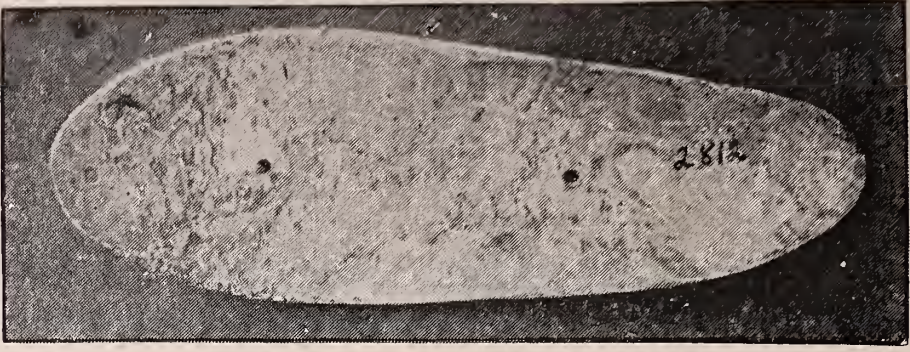


FIG. 95. S. I-3.

Dr. William Beauchamp, an authority on Iroquois relics, both ancient and modern, has published a series of bulletins which deal with shell objects and bone implements. We quote from Dr. Beauchamp as follows:—

“The use of shells for ornaments and money is so well known that no discussion of the subject is required here.* The aborigines of North America had the common primitive taste, but could not fully gratify it until the white man came. Some shells they were able to work in a simple way, but few of these have been preserved. Under some circumstances they kept well, but they could not stand much exposure. Pearly shells resisted best, while those in which white lime was the principal element soon lost their polish, and often their form.

“The Aborigines of the Pacific states had the Dentalium for money and ornament, but used the iridescent *Haliotis* to a great extent. The Indians of the Plains depended mainly on the eastern coast for what they used. A few northern shells were available, but the material for a large proportion of New York articles came from the south Atlantic coast and the Gulf of Mexico. These were most in use in the historic period. Few from the southern coast which are over 300 years old have been found here. Except as beads, shells were little used as ornaments in New York before that time. Yet this state was celebrated for the abundance of its wampum 250 years ago, partly from the stimulus given to its manufacture by the whites, and partly from the numbers and large size of one mollusk, by which it was supplied.

* From the Bulletin of the New York State Museum. Wampum and Shell Articles, by William M. Beauchamp, Albany, 1901.

“ ‘ Before the Europeans came to North America the Indians used to make their strings of wampum chiefly of small pieces of wood of equal size, stained with black and white. Few were made of mussels, which were esteemed very valuable and difficult to make ; for, not having proper tools, they spent much time in finishing them, and yet their work had a clumsy appearance. But the Europeans soon contrived to make strings of wampum, both neat and elegant, in abundance. These they bartered with the Indians for other goods, and found this traffic very advantageous. The Indians immediately gave up the use of the old wooden substitutes for wampum and procured those made of mussels, which, though fallen in price, were always accounted valuable. Formerly they used to give sanction to their treaties by delivering a wing of some large bird, and this custom still prevails among the more western nations in transacting business with the Delawares. But the Delawares themselves, the Iroquois, and those nations in league with them, are now sufficiently provided with handsome and well wrought strings and belts of wampum.’ ” — *Loskiel, page 26.*

Awls and Knives

“ It is quite propable that many small bone articles commonly called awls were really used for arrow points, and some have regarded the large and sometimes massive forms as daggers. In the paucity of stone arrowheads and knives on many Iroquois sites of the Sixteenth century, such uses seem reasonable, and have much to support them in the notes of early discoverers. * * * * Frequent small awls are also found which are but sharpened splinters of bone, as well described by words as figures. The outline of the tool often means nothing. The point of the awl is the only essential thing. In considering the better finished articles of all kinds, it is to be remembered that these are but a selection of typical forms out of thousands which have individuality, constantly varying in one way or another.

“ Then there are forms which have a rounded point, not adapted for piercing or any other known purpose. These are usually of horn, and are commonly classed with awls, though often termed punches. It may be best to assign them this name here, though this places them with cylindrical articles usually having rounded ends. While

they differ in form from these, they seem to belong nowhere else; and even then we do not know their use.

“ While a warlike character has been contended for in the case of some of the larger and longer forms, some persons have seen in the more slender examples pins, either for the hair or apparel. The latter supposition is questionable in most cases; and those of great length and sharpness would have been neither comfortably nor safely worn in the hair. Some may be assigned to this use. Many combine a broad knifelike form with the sharp point of an awl, if such they are. They seem not sharp enough for cutting, but would have been useful in skinning an animal. Among the Iroquois stone axes or celts were not abundant, and were probably prized. For deer-skinning the bone knife did just as well. It was lighter, more easily made, was sometimes distinct, but often combined the awl point with it, as our pocket knives practically do.” *

Besides awls, needles and punches in bone or horn, celts, scrapers and club-heads have been found on village sites. As these are so seldom obtained by collectors, it is not necessary to illustrate them here.

* *Horn and Bone Implements of the New York Indians.* Wm. M. Beauchamp, S. T. D. page 254. Albany, 1902.

Chapter XIV

Bicaves and Plummets

Dr. Snyder, the well-known archaeologist, prepared a paper on bicave stones for *Prehistoric Implements* (pp. 163-7) and as we heartily concur in all his opinions, we reproduce it here—with a few omissions.

The urgent need of the science of archaeology at the present time is a revision of its nomenclature; especially in the classification of prehistoric stone implements. Such uncouth and meaningless names as “spuds,” “bunts,” “banner stones”; and the vague and indefinite terms, “ceremonials,” “discoidal stones,” “amulets,” etc., should be discarded from our archaeological vocabulary, and replaced with names conveying some specific idea of the form, dimensions, or use of the objects. “Leaf-shaped”, applied to certain chipped flints, is another absurdity, and about as precise for descriptive purposes as is “a chunk of rock” as a measure of magnitude; for there are leaves of many diverse forms, and we are at a loss to know what particular shape of leaf is implied.

The term “discoidal stone” is equally ambiguous and confusing; for among aboriginal stone relics, disc-like, or circular, stones of almost every size and variety occur, differing so widely in dimensions and details of figure as to render their classification under one title bewildering and misleading. Waterworn pebbles, circular and flat, or disc-like, were abundant and ready at hand almost everywhere—by the lake shores or sand bars in every stream, and among the gravel beds of the drift formation—requiring but little modification by primitive savages to adapt them to use. And, we know, they were utilized in many ways, each of the modified forms serving, perhaps, a distinct and different purpose.



FIG. 96. S. 1-3. TYPICAL DISCOIDALS FROM VARIOUS LOCALITIES.

- 116. Yellow, brown ferruginous quartz, Tennessee.
- 2. Dark greenstone, from a mound, Illinois.
- 3. Quartzite, Georgia.
- 4. Argillite, Pennsylvania.
- 5. Not given.
- 6. Brown ferruginous quartz, Tennessee.
- 7. Quartzite, Ohio.
- 8. Quartzite, Ohio.

This cut is from "A Study of Prehistoric Anthropology." Dr. Thomas Wilson, Smithsonian Report, '87-'8.

In our archaeological literature the generic term "discoidal" is applied indiscriminately to all round, non-spherical objects of stone, shell, bone, hematite, or pottery; including ornaments a fraction larger than beads, spindle whorls, club heads, hammer stones, and a host of others of unknown uses. It is time, I think, that we should adopt a more distinctive classification of these circular art relics of the stone age. The best known type of so-called discoidal stones — the type most generally referred to by that designation — is circular in contour, varying in width, thickness and material; and has cupped, or mortar-like depressions on each lateral surface; in some broad and shallow, and in others narrow and deep; and in a few so deep as to coalesce and perforate the stone.

As the bilateral, saucer-like cavities on each side are characteristic of this type of disc-like stones, I would suggest, for convenience of description, its separation from all others of the group of round, flat, prehistoric relics now bunched together as "discoidals," and call them bicave stones, or bicaves, from the Latin *binus*, two, or double, and the noun *cavum*, a concavity, or hollow; or the verb *cavo*, I hollow, or scoop. This name, in my opinion, would be far more expressive of the shape and peculiar conformation of the object than its present inexact appellation. To further specify that the bicave stone is discoidal, would be superfluous, as all bicaves, with rare exceptions are round or disc-like.

When asked to what use the bicave stones were applied, the ready answer is, for playing games. How is this known? It is not known; but merely inferred from the accounts of early observers among certain recent Indian tribes who saw them playing games in which a round, flat stone was used. The impression that the hurling stones employed by modern Indians in these games were the identical bicaves in question, is so general, and so stated with such positiveness by certain writers, that it has become accepted as the true solution of the problem of the bicave stone's utility. An examination of the facts will, however, tend to dissipate this belief, and convince us that those strange and beautiful relics were not made for that purpose. It is altogether probable that, in some instances, modern Indians found prehistoric bicave stones, as we do, and adapted them to their games, as I have seen here, in Illinois, in early days, school boys use them as quoits for pitching, in the game of quoits.



FIG. 97. S. 1-2.

BICAVE, PERFORATED. LOCALITY NOT STATED.

The Indian game, in which round hurling stones were an important feature, has been seen and described by several early explorers ; among whom was Adair, who has given us a concise, and, no doubt, accurate account of it, as follows: "The warriors have another favorite game called Chungke, which, with propriety of language, may be called 'Running hard labor.' They have near their state house a square piece of ground well cleared, and fine sand is carefully strewed over it, when requisite, to promote a swifter motion to what they throw along the surface. Only one or two on a side play in this ancient game. They have a stone about two fingers broad at the edge, and two spans around ; each party has a pole of about eight feet long, smooth, and tapering at each end, the points flat. They set off abreast of each other at six yards from the end of the playground ; then one of them hurls the stone on its edge, in as direct a line as he can, a considerable distance toward the middle of the other end of the square ; when they have run a few yards, each darts his pole, anointed with bear's oil, with a proper force, as near as he can guess in proportion to the motion of the stone, that the end may lie close to the stone ; when this is the case, the person counts two of the game, and, in proportion to the nearness of the poles to the marks, one is counted, unless by measuring, both are found to be at an equal distance from the stone. * * * * The hurling stones they use at present were, time immemorial, rubbed

smooth on the rocks, and with prodigious labor ; they are kept with the strictest religious care from one generation to another, and are exempted from being buried with the dead. They belong to the town where they are used, and are carefully preserved." Captain Bernard Romaine (1775) says the hurling stone with which the Indians play the game of Chungke "is in shape of a truck," i. e. a small wheel; and Dr. Pratz (1774) describes it as a "flat, round stone, about three inches in diameter, and an inch thick, with the edge somewhat sloping." Lieutenant Timberlake (1765) says it is "a round stone, with one flat side, and the other convex." Catlin, who saw the game played much later, says the hurling stone used was a "round stone ring."

It will be noticed that none of these writers, who describe the Indian game, mention the hurling stone as having lateral indentions. Those Adair saw used, "two fingers broad at the edge," were certainly not of the common form of bicaves represented by Figure 96. He says the Chungke stones were not buried with the dead ; but it is well known that bicave stones frequently were so deposited. I have one taken by myself from a stone grave in Tennessee ; another I exhumed from an aboriginal cemetery in southeastern Missouri, and several others recovered from mounds and graves near the Illinois river. Judging the prehistoric Indians by their descendents of recent times, we may well rest assured that they were not so fond of labor as to carve, from the hardest rocks, and beautifully finish, the bicave stones, and grind out the hollows on each side with such care and precision, without some well-defined purpose. No Indian would ever have bestowed the arduous work required to make these cavities, and to round the edges of the stone, and finely polish it, that in the silly and stupid game of chungke would be entirely useless ; when a plain round stone, with flat, or convex sides, would answer the purpose better. Not one of the bicave stones presents abrasions, or marks of attritions about its periphery, that would invariably be present had it been used by hurling on a hard clay or sandy surface. Many of these strange relics, by reason of their diminutive size, and the fragile material of which they have been formed, could not possibly have been used in any such game as Chungke. They range in diameter from one inch, to six or eight inches ; and in material from clay to the most refractory crystalline

rocks. In my collection is one, of quartz crystal, but a fraction over an inch in diameter; another, a little larger, is of hard white clay unbaked; several have been found in this state moulded from pottery ware, or clay, burned, and smoothly polished; and one, from an Illinois river mound, was sculptured from bituminous shale, and finished to a glossy polish. They all have the bilateral cavities, and the same purpose was evidently the motive in the manufacture of all.

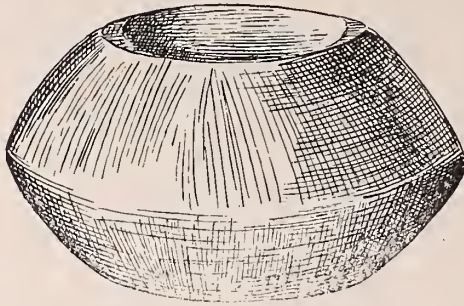


FIG. 98. S. NOT GIVEN.

ANOTHER FORM OF BICAVE. SOUTHEASTERN MO.

It is possible that some of them were gaming devices; but surely if they all were so employed, considering the vast numbers of them found, gambling must have been the sole occupation of the native American. General Thurston says, "very great numbers of them must have been used in Tennessee;" and all writers on prehistoric remains in the Mississippi valley mention their numerous presence. To my personal knowledge more than three hundred of them have been found within a radius of twenty miles around Beardstown, on the Illinois river, and they have occurred about in this proportion throughout the valley of the lower Illinois, and borders of the Mississippi. They are here most commonly found about the old village sites and camping places, associated with stone and bone implements and camp refuse. I have two small bicave stones that were turned up by the plow in this (Cass) county, on old Indian camp sites, several miles apart, having in one hollow of each a smooth waterworn pebble. The contact of the stone and pebble may have been accidental; or may be evidence that the two were used together in gaming, or some other purpose; but, in both cases, the two had been so long together that the calcareoferruginous

earth in which they were imbedded cemented them so firmly that some force was necessary to separate them.

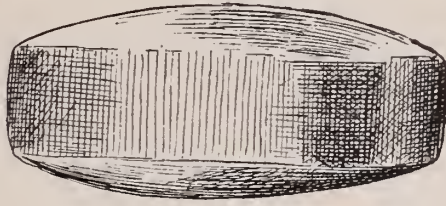


FIG. 99. S. NOT GIVEN.

THE DISC WITHOUT DEPRESSIONS. PHILLIPS CO., ARK.

The old idea sometimes still advanced, that bicave stones were intended for paint mortars, is scarcely worthy of notice. Only an idiot would think of making a mortar on opposite sides of the same rock; or excavating, for that purpose, both sides of a circular stone but an inch in diameter; or of constructing a mortar of clay, pottery or shale. The cavities of the finished bicaves are never striated, or roughened, as would be the case if brought in contact with stone pestles; but present the regularity of proportions, and smoothness of surface, that could only be produced by a rotating instrument, probably of wood. In a few of the bicave stones it seems that this rotary grinding process continues as long as they were in use, gradually carrying the cavities down deeper; but in the greater number the cavities were evidently sunk to the specified depth to fit them for their intended use, and then polished. Occasionally in one, or both cavities of a stone are seen incised lines in the form of a bird's track, which, no doubt, had some significant meaning connected with the stone's office. It is often the case that these stones are found — as are sometimes celts, grooved axes, etc., — saturated, or heavily coated, with oily pigment, accumulated apparently by long contact with animal fat. If one in this condition is boiled in water or subjected to an immersion in a concentrated solution of sal soda for a few hours, the greasy matter will be extracted and seen floating on the surface of the liquid, and the stone will be clean and bright as in its original natural state. This fact, together with their great numbers, their wide distribution, their various dimensions, forms, and degrees of fine finish, and their presence in old village sites and

camp refuse, strongly suggests the probability of their economic use as domestic implements. To me they are the most incomprehensible of all prehistoric relics. In our ignorance of primitive Indian life we know of no industry or art practised requiring these round bicave stones. They cannot reasonably be placed in either of these illy-defined and questionable classes styled "ceremonials," "charms," or "talismans"; nor can we assign them to the category of ornaments, or weapons. Were they tools of the potter, weaver, or basket maker?

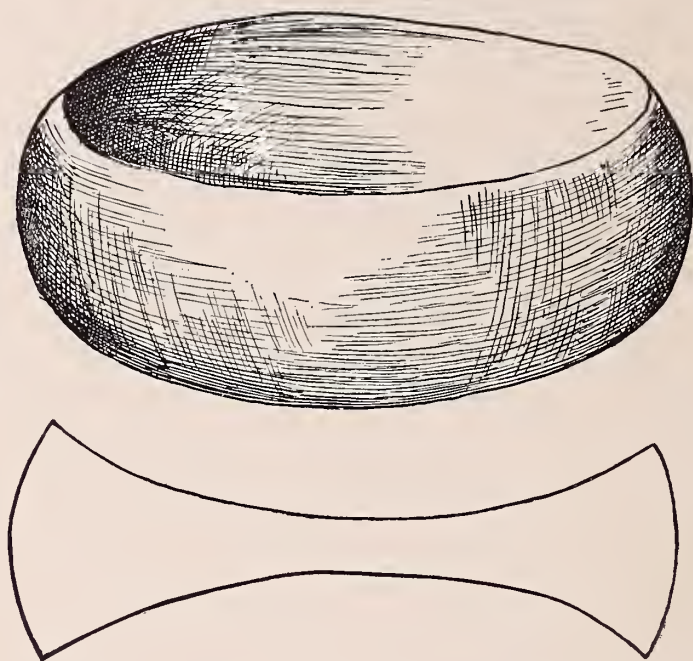


FIG. 99 A. S. ABOUT 1-2. LOCALITY UNKNOWN.
BICAVE AND CROSS SECTION OF SAME.

Plummets

These are found in all sizes and materials — slate, shell, sandstone, hematite and granite. Fig. 100 is the long slender form of plummet made of banded slate. Fig. 101 is a short thick plummet of granite. Sometimes the plummets are flattened on one side. Many theories have been advanced, but as yet we cannot say with assurance what purposes plummets served in aboriginal life.



FIG. 100. S. I-I.
NEAR DAYTON, O.

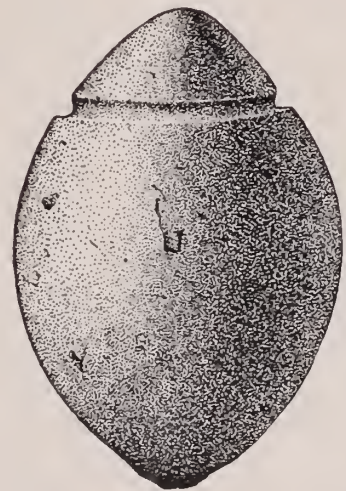


FIG. 101. S. I-I.
CATAHOULA, LA.

TWO TYPES OF PLUMMETS.

Chapter XV

Pipes

In the *Archaeologist* for July, August, and September, 1894, appeared a paper written by Mr. A. F. Berlin and descriptive of many pipe forms. It is so excellent that we shall reprint portions of it here.

The first to mention will be the "monitor" shaped, of those pipes having a flat or slightly curved base with the bowl, often plain and round, which is called its simple or primitive form, projecting from the centre, and through one end of which was drilled a narrow hole, about the size of a straw, to the hollow of the bowl, serving as a mouth-piece, while the other end at the same time did well as a handle held by the smoker.* The carved specimens are often of an elaborate form, representing the human head, animals, birds, and reptiles. Squier and Davis figure in *Ancient Monuments* a pipe of this type with a plain bowl, around which is encircled a serpent. They found this peculiar type of pipe in considerable numbers while surveying the ancient earth-works in Ohio, and have described and figured them in Volume I, *Smithsonian Contributions to Knowledge*. Since then many other fine specimens have been discovered. From one of the hearths of a number of mounds, situated four miles north of Chillicothe, Ohio, these explorers took nearly 200 stone pipes of this peculiar form, many of which were damaged by the action of fire.† The material from which most all these pipes were made is said to be a compact slate, argillaceous ironstone, ferruginous chlorite and calcareous mineral, for which information the writer is indebted to the valuable work entitled "Flint Chips", by E. T. Stevens. This test was made on a number found by Squier and

*The Smithsonian, Peabody, Field Columbian, and seven State Museums contain a total of over five hundred of these "monitor" or "platform" pipes.

† These were nearly all effigy pipes. The Blackmore Museum, near London, now contains them. They constitute the finest exhibit of American pipes from one locality in the world.

Davis, and belonging to the Blackmore Museum at Salisbury, England, by Prof. A. H. Church, who found them to consist of the softer materials above described.



FIG. 102. S. 2-7.

Illustrating thirty-three pipes from Mr. H. P. Hamilton's Collection, Wisconsin.

- No. 1 — Wisconsin. Stone with short platform.
- No. 2 — Wisconsin. } Clay. Found on same farm. Rare in
 No. 3 — “ } Wisconsin. Both of these are of the
 } trumpet form.
- No. 4 — Disk, Catlinite, Wisconsin.
- No. 5 — “ “ “
- No. 6 — Minnesota. Catlinite.
- No. 7 — Wisconsin. “
- No. 8 — “ “
- No. 9 — Tube. Oregon.
- No. 10 — Michigan.
- No. 11 — Wisconsin.
- No. 12 — “
- No. 13 — Michigan.
- No. 14 — Wisconsin. Catlinite.
- No. 15 — “ Broken, platform type.
- No. 16 — Minnesota. Catlinite.
- No. 17 — Oregon. Tube.
- No. 18 — Wisconsin.
- No. 19 — “
- No. 20 — “
- No. 21 — “
- No. 22 — Tube. Oregon.
- No. 23 — Michigan.
- No. 24 — Wisconsin.
- No. 25 — Tube. Oregon.
- No. 26 — Wisconsin.
- No. 27 — Oregon.
- No. 28 — Oregon.
- No. 29 — Wisconsin.
- No. 30 — “
- No. 31 — “ Catlinite.
- No. 32 — Oregon.
- No. 33 — “

The supposition that many of these pipe are close imitations of some of the fauna found in the United States is refuted by other archaeologists and naturalists who claim that although Squier and Davis go so far in their admiration (*Ancient Monuments*, p. 272,) as

to say that, so far as fidelity is concerned, many of them (i. e. animal carvings) deserve to rank by the side of the best efforts of the artist naturalists in our own day — a statement which is simply preposterous. So far, in point of fact, is this from being true, that an examination of the series of animal sculptures cannot fail to convince any one, who is even tolerably well acquainted with our common birds and animals, that it is simply impossible to recognize specific features in the great majority of them. They were either not intended to be copies of particular species, or, if so intended, the artist's skill was wholly inadequate for his purpose." (Henshaw in *Animal Carvings from the Mounds of the Mississippi Valley*, Annual Report of the Bureau of Ethnology, 1880-'81, p. 148.)

These mound pipes, so-called because the greater part of them have been taken from mounds, and, which it is asserted, were only made in or near the present State of Ohio, are nearly all of small size, and remarkable for the small capacity of the bowl.* This feature is noticeable also in other pipes about to be described.

There are other forms of animal pipes made in imitation of birds, mammals, and amphibians; and sometimes the human figure, which are distinct from the so-called "mound" or "monitor" type. They are in very nearly all cases large and unwieldy objects, and no doubt belong to the order of "calumet" pipes, used on occasions or ceremony or in solemn meetings, in the forming of treaties; the ceding of lands, etc. We all know that on such occasions the pipe, with its attending tobacco, played a principal part, and nothing could be done without its presence.

Another very rare type of pipes are the specimens called "disc pipes"; so named because the bowl is a broad horizontal disc, several inches in diameter, resting on a rectangular base or stem which projects some distance beyond the bowl. In the writer's collection is a catlinite pipe of this type plowed up in a field in the vicinity of a mound near Elmira, Stark County, Illinois. This figured in Edwin A. Barber's article on "Catlinite" in the *American Naturalist*, Vol. xvii, p. 754. This writer says of it: "This pipe, which is carved from a single piece of stone, although not unique in

* This type exists in Illinois, Indiana, Michigan, Wisconsin, West Virginia, Kentucky, and rarely in Tennessee, Eastern Missouri and Arkansas. It seems confined to a region three hundred and fifty miles in diameter, having Cincinnati as its center.

form, may be considered a rare type." The bowl, which is much smaller than the orifice in the stem, was intended to hold tobacco, mixed probably with other herbs having narcotic properties, the smoking and perhaps inhalation of which produced a sensation akin to intoxication or exhilaration. Mr. Barber mentions four other pipes of similar form belonging to different cabinets, and all made of the same material.

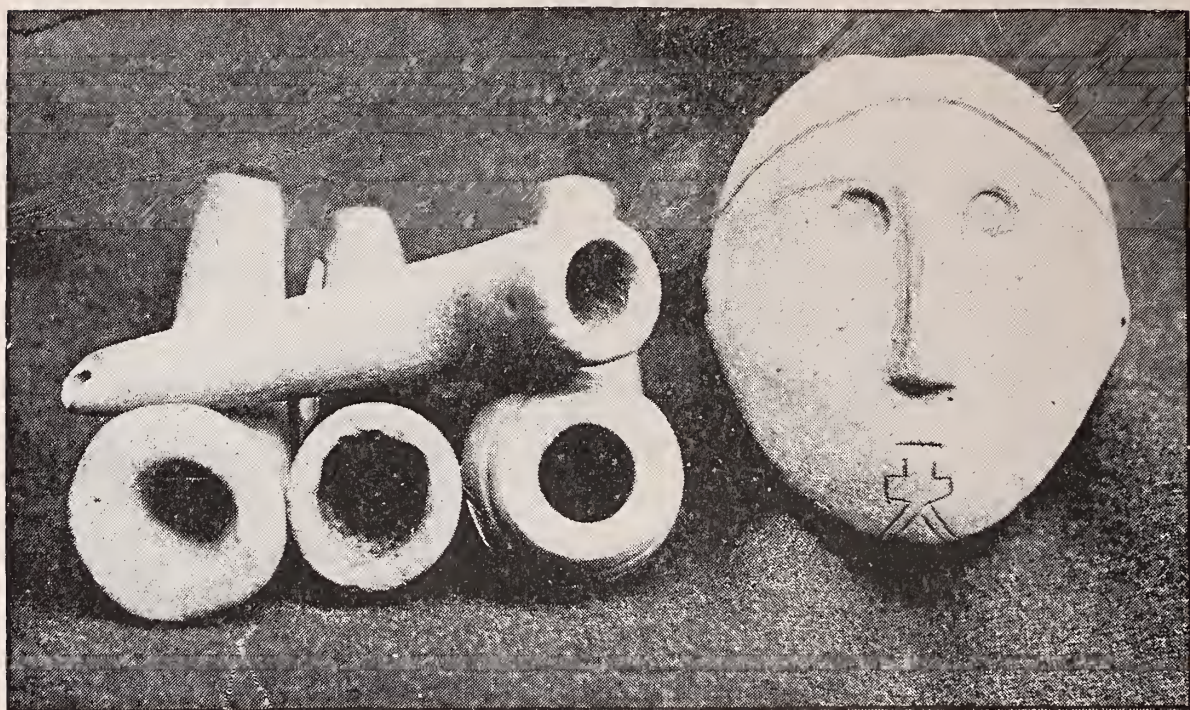


FIG. 103. S. 2-3.

Fig. 103, a group of peculiar cylinder or tubular pipes from an ancient burial ground near Willoughby, Ohio, on the shores of Lake Erie. These pipes are found in the St. Lawrence Basin more than in the Ohio Valley. The mask to the right is interesting, although it may be modern, as the chin is ornamented with a cross.

Catlinite played an important part in the manufacture of pipes, and was undoubtedly used by the North American Indians for hundreds of years. The mineral was named after Mr. George Catlin, who was the first white man allowed by the Indians to visit the red pipe-stone quarry in 1836. It is situated in what is now Pipestone County, Minnesota. A vivid and interesting description

of this excursion is given by Mr. Catlin in "Catlin's Indian Gallery", in *Smithsonian Report* for 1885, part 2, p. 240. It may interest my readers to quote from his musings while at the quarry:—

"Here (according to their traditions) happened the mysterious birth of the red pipe, which has blown its fumes of peace and war to the remotest corners of the Continent; which has visited every warrior, and passed through its reddened stem the irrevocable oath of war and desolation. And here, also, the peace-breathing calumet was born and fringed with the eagle's quills, which has shed its thrilling fumes over the land and soothed the fury of the relentless savage."

Clay or terra cotta pipes, from the size of a thimble to those having a capacity of one and even two ounces, and of various and diversified designs, have been found in abundance in every section. They are, however, in a perfect condition, not numerous. This is easily accounted for. They used in the manufacture of these clay smoking utensils the same material as that from which their pottery was made, which appears to have a mixture of sand, clay, and broken or pounded shells. The pipe of this material was no doubt mostly used by the aborigine for smoking purposes.

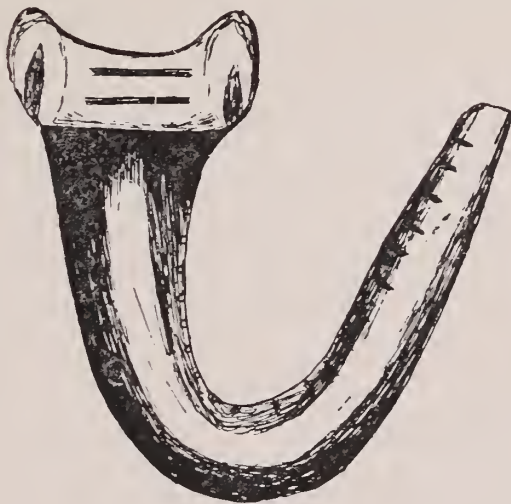


FIG. 104. S. 1-2.

Typical Iroquois pipe of clay. Found near Trenton, Ontario.

Speaking of the great rarity of pipes in New Jersey, the same of which can also be said of Eastern Pennsylvania, Dr. C. C. Abbott writes in Smithsonian Report for 1875, p. 343 : "The comparative rarity of aboriginal smoking pipes is easily explained by the fact that they were not discarded as were the weapons, when those by whom they were fashioned entered upon the iron age. The advances of the whites in no way lessened the demand for pipes, nor did the whites substitute a better-made implement ; therefore, the pipes were retained, and used until worn out or broken, excepting such as were buried with their deceased owners. What was the ultimate fate of these can only be conjectured. Certain it is that in every instance an Indian grave in New Jersey does not contain a pipe. If the practice of burying the pipe with its owner was common, we must believe that the graves were opened and robbed of this coveted article by members of the same or some other tribe." This may be objected to on account of recognition of the stolen property, but "we do not think the fear of detection deterred the ancient grave robber." The circular, trumpet-like bowl form of pipe appears to be the more prevalent New York form of this clay implement. I am indebted for this information to Rev. W. M. Beauchamp, who also tells us in his article, "Comparison of Relics in Ontario and New York," *American Antiquarian*, Vol. xii, p. 170. "The country of the Petuns who raised tobacco for sale, may have furnished pipes for the smokers as well. The Mauquawwop, or man-eaters, probably Mohawks, were pipe makers, which they bartered with other Indian tribes as far as three or four hundred miles away. The Delaware Indians bartered pipes from other Indian nations living on and beyond the Mississippi River. The Catawbias, who lived in the western part of Southern Carolina, were makers of pipes, and they exchanged them with the neighboring tribes for raw skins. The Natchez and kindred tribes excelled in the manufacture of pipes, etc., which they bartered among themselves, and Cabeza de Vaca found among the Indians of Texas, a dealer in flint and other articles which he procured in the interior, and brought to the Indians on the coast to either exchange or sell." For the above interesting information the writer is indebted to Mr. Lucien Carr's very valuable paper "The Mounds of the Mississippi Valley, Historically Considered."

Fig. 105 shows two effigy pipes. Both are of fine-grained sandstone. The frog was found at Waynesville, Ohio, and is well made, and weighs five pounds. Many fine pipes have been taken from graves in gravel knolls. Several observers are of the opinion that gravel knolls or glacial kame burials represented a different tribe from those of the mounds.

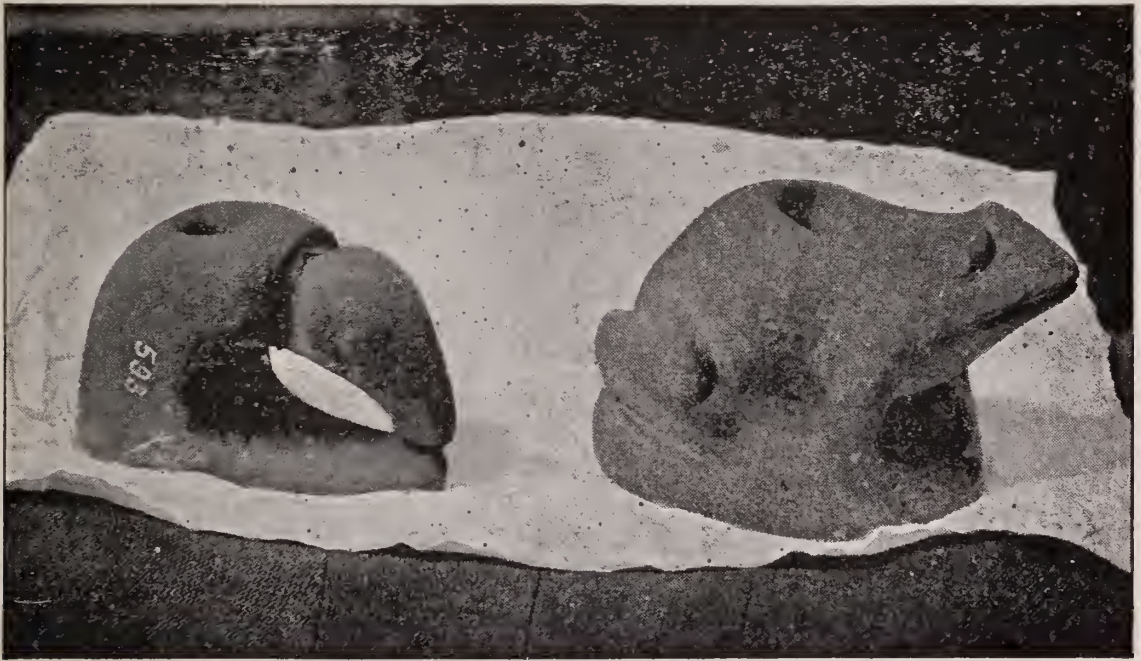


FIG. 105. S. ABOUT 1-3.

At first glance the pipe to the left looks like a mastodon, but it doubtless represents a bird. Both pipes are in the Moorehead Collection, Ohio State University Museum. We are indebted to the Ohio State Archaeological and Historical Society for the loan of this cut.

Tubular Pipes — These long, cylindrical, funnel-shaped objects having the appearance of our modern cigar-holders in an exaggerated form, and measuring from one and one fourth inches to very nearly a foot in length, are found in many sections of the United States. They are common in southern California and the islands along the Pacific Coast. They seem to be more numerous in California than elsewhere. Bone, copper, stone and clay were the materials used in



FIG. 105 A. S 1-1.

In Monroe County, Ark., two large effigy pipes were discovered. They are distinctly southern and not like those of the Ohio Valley or the Lakes. Dr. Thomas says of this one that it is of quartzite, partially polished, and represents a kneeling, naked individual.

their manufacture. Sixteen of these nicely wrought implements taken from graves at Dos Pueblos and La Patera are shown in Vol. 7, Archaeology Report of U. S. Geographical Surveys, west of one hundredth meridian, Lieutenant George Wheeler in charge. A number of them still contain the mouth-pieces made from the small, hollow bone, either from the wing or leg of a bird, which were secured into the tube by asphaltum. They are all made from a soft, soapy stone called steatite.



Fig. 106. Collection of Mr. A. J. Powers, Iowa. Found in Central Georgia. A very fine pipe and exceedingly rare and well made.



FIG. 106. S. 1-5.

Fig. 107. Effigy pipe from Bartow County, Ga.



FIG. 107. S. 1-5.

The late Paul Shumaker, in a note sent to Peabody Museum, Cambridge, Mass., describes them as follows: "The pipe is a funnel-shaped tube like a thick, enlarged modern cigar-holder, with an opening usually over an inch at the wide end, which narrows to one-third of an inch towards the other one of corresponding decreased thickness. The hole was drilled from both ends, but only to a short distance from the smaller, and the mouth of the pipe was then en-

larged by scraping parallel with the longer axis. As a mouth-piece, which protrudes about an inch, a piece of a wing or leg-bone of some bird was inserted and tightly secured with asphaltum. The pipe was usually made of steatite, and is sometimes neatly finished. Among the Klamatlis of the present day a pipe of like form is smoked, and it amused me to see them bending back their heads to bring the pipe in a vertical position so as not to lose any tobacco (which I found a sickening narcotic; they smoke still the native tobacco, *nicotina attenuata*) while taking a long draught, which was inhaled to longer enjoy the short opportunity, as the pipe must be passed on."

Mr. Douglass owns over three hundred North American pipes, and he writes:

"I may venture to say a word as to the scarcity of pipes with bowls set angularly upon the stem among the Indian tribes occupying Mexico and the Central American States, at the time of and subsequent to the advent of the Europeans.

"Throughout the area of the United States such pipes have been found abundantly, and their characteristics are well known to collectors, but as we go southward on the continent through Mexico and Central America, they become most rare, and are seldom to be seen or studied."

There is another kind of pipe which the writer has almost failed to mention. This is the form called the "inverted bottle-stopper." They are short and clumsy; small at the top and large at the bottom. They are exceedingly rare.

The pipe carved to imitate the head of the human being is also considered a distinct type, but the writer has placed them with the pipes which are carved to represent the human form. All types representing life may be called effigies.*

Figure 108 presents a group of characteristic pipes. No. 1, an effigy with curved base. This is of the same type as found by Squier and Davis in such large numbers at Mound City, Ross County, Ohio. No. 2 and No. 4, monitor or platform pipes, common throughout the Ohio Valley. No. 3, a pipe with curved base. The specimen is rarely found save in Illinois, Kentucky, and West

* End of Mr. Berlin's article.

Virginia, and it is not common there. No. 5 and No. 7 ordinary L-shaped pipes having stems exhibiting various angles. No. 7 and No. 10 are manifestly modern, No. 9 is the disk pipe referred to by Mr. McGuire as modern. We are of the opinion that some of these disk pipes may be ancient, but doubtless many of them are modern. No. 11 is often found in Illinois and West Virginia and in the South.



FIG. 108. S. 1-4.

Fig. 109. A large duck pipe in the possession of Mr. W. F. Parker of Omaha, Nebraska. It is not quite three times the size of the illustration, and was found near Lookout Mountain, Tenn., many years ago. It is a typical council pipe, made of dark, bluish green steatite and will hold a large handful of tobacco.

Four others are of platform type. The large one is very rare, there being but about five or five specimens in the country of this size. One is exhibited by the Smithsonian Institution; another by Mr. Parker. The bowl is about 7 inches in length and 1 1-2 inches in diameter, and would hold a large quantity of tobacco. The platform is 4 inches in width and about 14 inches long. The small one in the foreground is of black steatite and highly polished. It was found in Southern Kentucky.

Over the duck pipe is one of clay from Romney, W. Va. In the centre is a small effigy pipe of black stone.

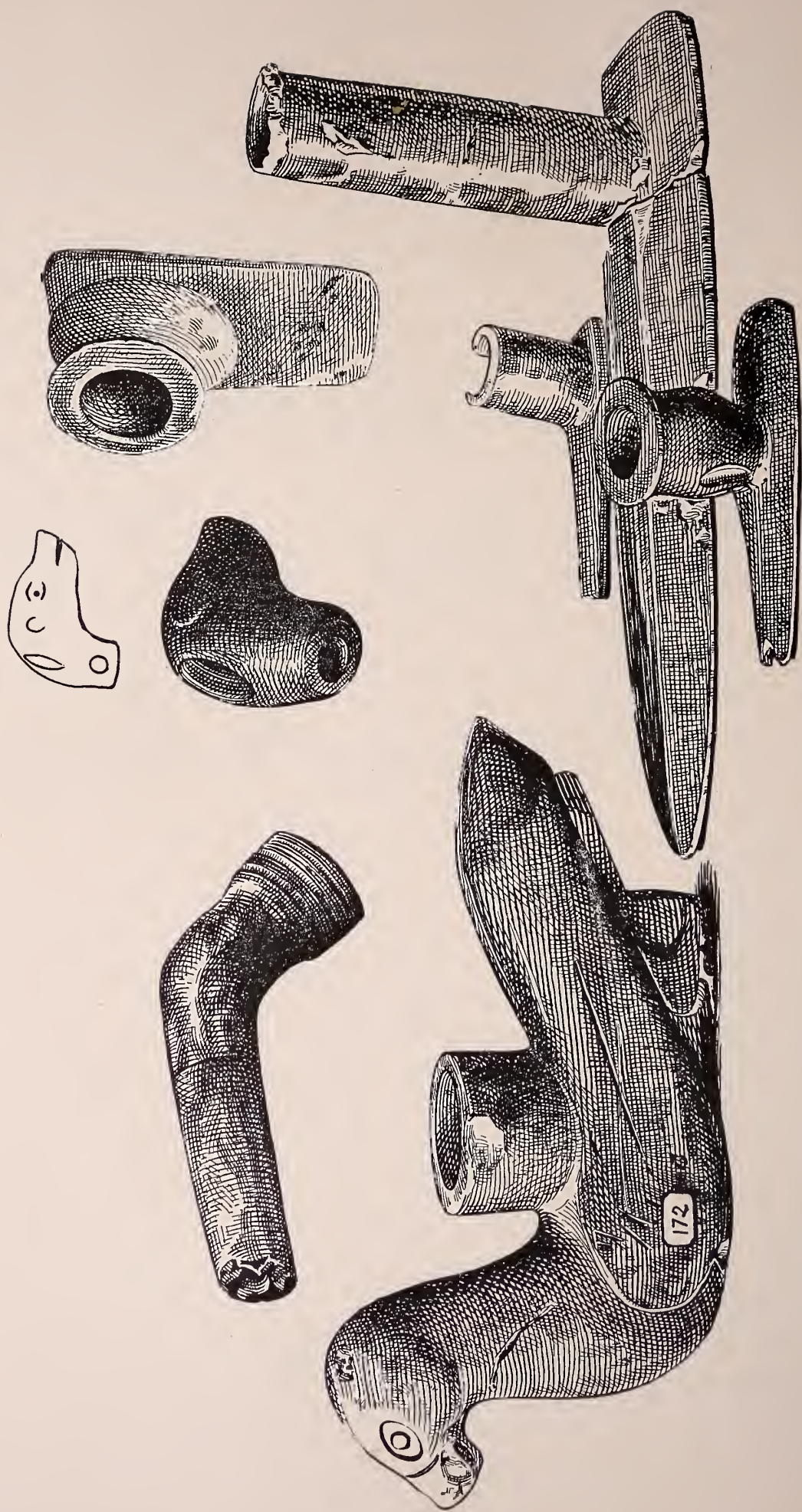
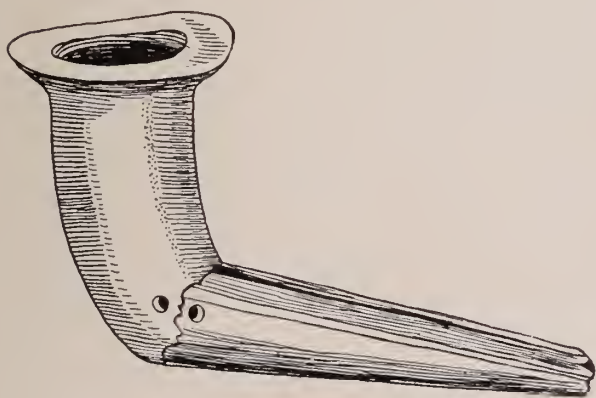


FIG. 109. S. ABOUT 2-5.

In portions of Canada human faced clay pipes are not rare and occur more frequently than representations of animals. Sometimes, on the square mounted pipe bowls, there will be a miniature mask at each corner, and occasionally this is reduced to the three conventional masks for eyes and mouth. The trumpet type is modified often by having a square or many sided top, with small and various decorations on the rim. Some of these plain cornet pipes have a very large, wide mouthpiece several inches across, and some have a beautiful gloss, nearly as fine as a polish, and vary in color from light reddish yellow to jet black, and are far more numerous than the whole gamut of ornamented pipes.*



Pipe broken; then drilled and fastened together. Quite rare.

FIG. 110. S. 1-2.

Mr. J. D. McGuire † places the monitor pipe as later. The simple bowl and face-shaped pipes in the Middle South; also the peculiar form of a round or angular bowl and short round base, which he calls Southern Mound type; the disk or jewsharp pipe and the biconial, the tubular and the heavy, broad form, etc., as earlier. He illustrates all of these forms.

* See Ont. Arch. Reports, and *Beauchamp's Bulletin* on New York earthenware.

† "Pipes and Smoking Customs." Smithsonian Report, 1897.



FIG. 102. S. 1-2.

Fig. 102. A very finely carved and remarkable pipe from Montgomery Co., Ky. Collection of Col. Bennett H. Young, Louisville.

Chapter XVI

Pottery

The Mississippi Valley is famous for the great perfection attained in ceramic art. Its pottery is only excelled by that of the Cliff and Pueblo people of the Southwest ; and thousands upon thousands of the various jars, bowls, urns, bottles, effigies, idols, etc., have been taken from its mounds and graves and are to be found in all the museums and many of the private collections of this country and Europe.

The (1898-'99) Report of the Bureau of American Ethnology is devoted entirely to American prehistoric pottery. Several thousand specimens are illustrated. Prof. Wm. H. Holmes, the best posted man on pottery in the United States, wrote the monograph mentioned, and we gladly commend it to students and collectors.

Those not acquainted with the pottery of the Ohio Valley and Middle South should bear in mind that it does not materially change until the mouth of the Wabash River, in southern Indiana, is reached. That is, descending the Ohio from Pittsburg and visiting all tributary streams, an archaeologist would find no southern forms until he arrived at the Wabash. A large cemetery was opened at the mouth of that river by a field assistant in the fall of '98 and several hundred specimens, almost identical with those of Arkansas and Missouri, were taken from the graves. To a certain extent, southern Illinois should be classed with the middle South, for its agricultural implements and pottery are quite similar to Tennessee, Arkansas and Missouri forms. But the interior of that state does not seem to have been inhabited by tribes skilled in the manufacture of pottery, effigy pipes, discoidals, engraved shells, and other objects common further down the Mississippi or up the Tennessee and the Cumberland. There are individual exceptions to this statement, but we are taking into consideration the general trend of archaeological testimony, and our conclusions are not swayed by the presence of a few foreign implements or utensils. By way of example ; obsidian has

been found in Ohio mounds, yet we do not conclude that all of the Ohio tribes used obsidian.

The prehistoric peoples in the northern part of the Middle South seem to have confined themselves to the large rivers. In southwest Missouri and northern Arkansas their pottery is found frequently along the bayous of the Mississippi.

Steatite, or soapstone dishes, bowls, etc., are sometimes found, but being more common in the extreme South, or along the Atlantic coast, a description of them will be deferred.

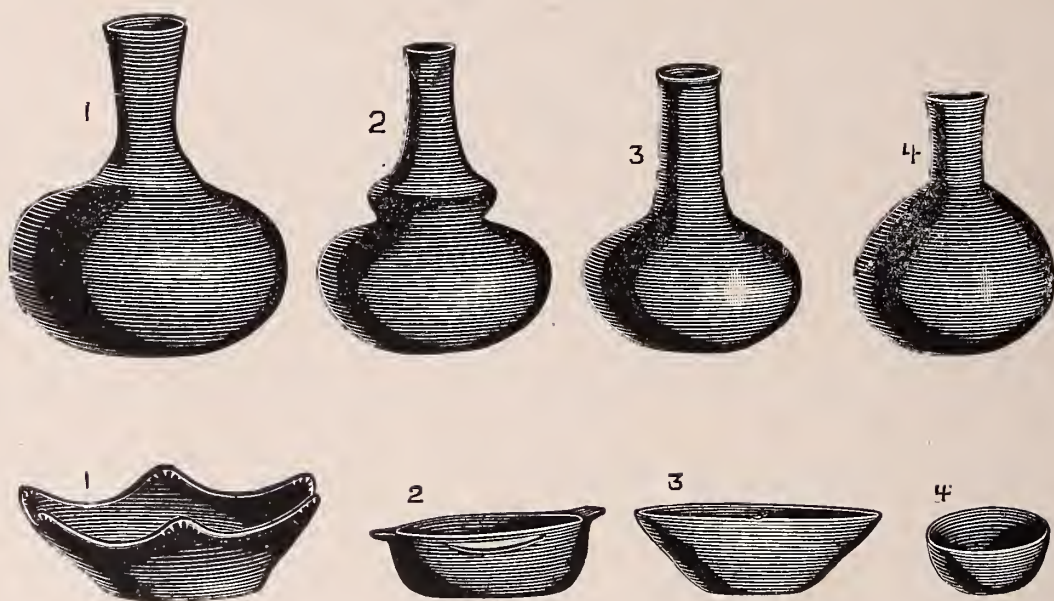


FIG. 112. S. 1-5.

Fig. 112 shows 8 typical plain bottles and dishes from mounds in Missouri and Arkansas. There is an endless variety of the bottle form. We are indebted to the Missouri Historical Society for several of the following figures.

Fig. 113. Effigy pottery, consisting of plain bowls and bottles surmounted by effigy heads. There is no attempt made at showing more than the head of the bird, animal or human. This class of pottery is common in the Middle South.

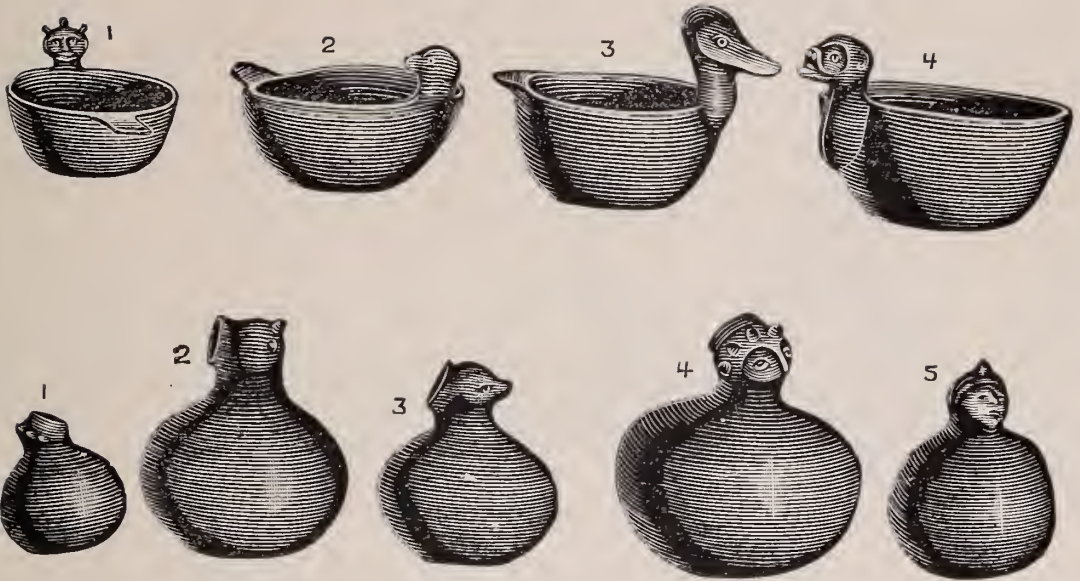


FIG. 113. S. 1-5.

Fig. 114. No. 1 is a plain jar of common form, having a short neck and a large body. No. 3 is a type between the jar form and the bottle proper. No. 4 is a bottle having an especially made base. This vase is common to the region, and will compare favorably with very early art in the Mediterranean countries.



FIG. 114. S. 1-5.

In the lower row No. 1 is decorated at the base ; No. 2 is plain, but has curious handles : No. 3 is both decorated and provided with handles, and No. 4 may be a toy.

Fig. 115, presents five interesting vessels. No. 1 is a well made bottle or small jar decorated with painted spiral lines around the body and has a peculiar decoration upon its neck. Usually, the painting is in red. Sometimes the entire vessel is of red clay; but

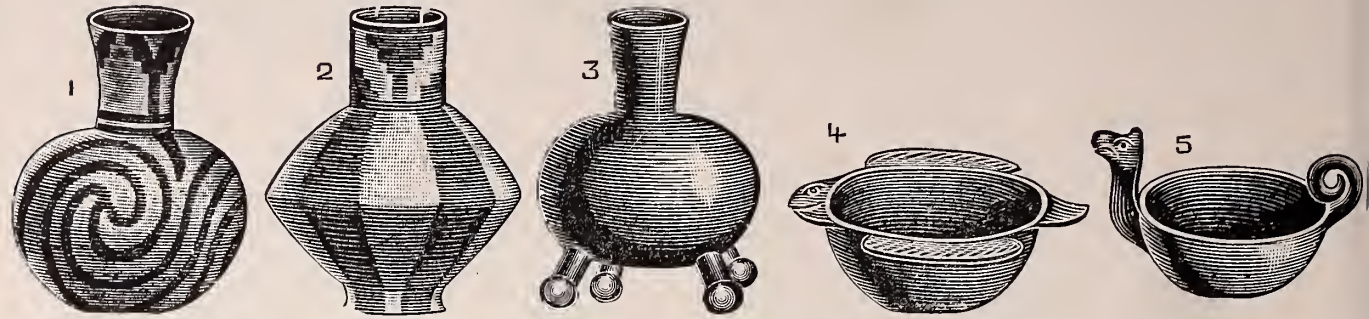


FIG. 115. S. 1-5.

more frequently they are of a dark gray, brown or light gray. The red jars and bowls are highly prized among collectors. No. 2 is also painted. Doubtless the decorations on these had some ceremonial significance. No 3. is a tripod jar. No. 4, a fish. No. 5, a bowl surmounted by a deer's head on the one side, whereas the animal's curled tail forms a handle on the opposite side.

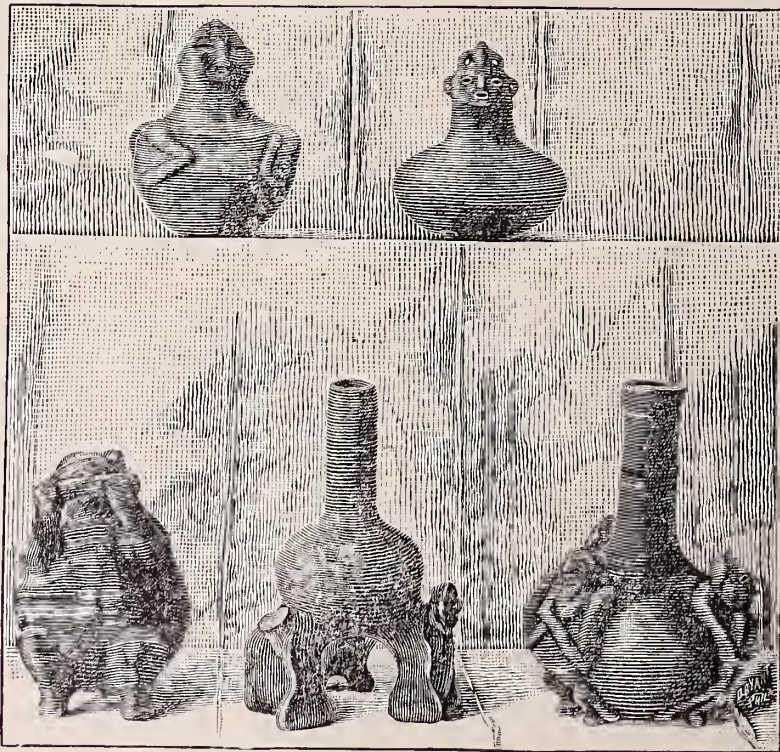


FIG. 116. S. ABOUT 1-7.

Fig. 116. Mound pottery from Mr. Thos. Beckwith's collection, Southwestern Mo. Found in southern Missouri near the Mississippi River. The new Madrid region is famous — thousands of vessels have been taken from its mounds.

No. 1. A jug with the outline of a frog upon it, but surmounted by a human face.

No. 2. A peculiar human-shaped bottle. The projection and perforations at the top doubtless indicate method of hair-dressing, or a certain headgear.

No. 3. A bear standing on its hind legs with a bone in its mouth.

No. 4. A red bottle resting upon the backs of three kneeling human figures. Two heads were missing when it was found. Effigies, 3.718 inches high; entire vessel, 9 inches high.

No. 5. A red bottle resting upon three human figures in a squatting position. The arms are crossed. Effigies, 5 inches high; entire vessel, 9 1-4 inches high.



FIG. 117. S. 1-3.

Fig. 117. The left-hand specimen is an effigy bottle, the mouth being enlarged for the opening. In most of these bottles the mouth

is in the back of the head. The right-hand specimen is a very large and grotesque bowl representing the human figure. The form is quite rare, for it portrays an abnormally fat person lying on his back. The legs are short and pig-like. The bottle-shaped effigies frequently show fat persons in a kneeling position. The former is in the collection of the Ohio State University; the latter is in the possession of the Smithsonian Institution.

We quote at length from the Twentieth (1898-9) Report of the Bureau of Ethnology (Washington) some of Prof. Holmes's remarks on pottery. As Professor Holmes refers to figures illustrating the types he explains, we have had to omit portions of his text. However, our figures show most of these forms.

Manner of Occurrence

Since pottery was made very largely for use in the domestic arts, its remains are everywhere associated with household refuse, and are found on all village, house, camp, and food-producing sites occupied by pottery-making peoples. It is plentiful in the great shell heaps and shell mounds along the Atlantic and Gulf coasts, and abounds in and around saline springs where salt was produced. Found under such conditions it is usually fragmentary, and to the superficial observer gives a very imperfect idea of the nature and scope of the art, but to the experienced student it affords a very satisfactory record.

Nearly all peoples have at some period of their history adopted the practice of burying articles of use or value with their dead, and the aborigines of this country were no exception. It is to this mortuary usage that we owe the preservation of so many entire examples of fragile utensils of clay. They are exhumed from burial mounds in great numbers, and to an equal extent, in some regions, from common cemeteries and simple, unmarked graves. The relation of various articles of pottery to the human remains with which they were associated in burial seems to have been quite varied. It is probable that the position of the vessel was to a certain extent determined by its office; it may have contained food or drink for the dead, personal articles of value, or offerings to deities to be propitiated, and custom or fancy dictated the position it should occupy;

but it appears that in many cases the articles were cast in without regard to relative position or order.

Pots

There is a very large class of wide-mouthed vessels of pot-like character. They are generally darkened by use over fire, and more than any other form probably served as ordinary culinary utensils. The size varies from that of a drinking cup to that of a cauldron of 15 or 20 gallons capacity. The frequent occurrence of strong handles confirms the theory of their use for boiling and handling food. The specimens illustrated are from Tennessee and Arkansas.

The rims of these vessels were modified for decorative purposes very much as are the rims of the bowls. The bodies are sometimes elaborately ornamented, mostly with incised figures, but often with punctures, nodes, and ribs. The incised lines, curved and straight, are arranged to form simple patterns encircling the upper part of the vessel. The punctures, made with a sharp point, form encircling lines and various carelessly executed patterns. A rude sort of ornamentation was produced by pinching up the soft clay of the surface between the nails of the fingers and thumbs. Relief ornament consists chiefly of applied fillets of clay arranged to form vertical ribs. Rows of nodes are sometimes seen, and in a few cases the whole body is covered with rude nodes or spines.

Life Forms

Clay vessels imitating in form marine and fresh-water shells are occasionally obtained from the mounds and graves of the Mississippi Valley. The conch shell appears to have been a favorite model, especially as modified for a drinking cup by the removal of one side of the walls and all the interior parts. The clam shell is also imitated. The more conventional forms assumed by these vessels are especially interesting as illustrating the varied ways in which life forms modify the normal conventional shapes of vessels, thus widening the range of the art.

In many countries the shape of earthen vessels has been profoundly influenced by vegetable forms and especially by the hard shells of fruits. The gourd, the squash, and the cocoanut are repro-

duced with great frequency. In many cases the shape of the body of vases not at once suggesting derivation from such forms may finally be traced to them. Thus the lobed bottles of Tennessee probably owe their chief characteristic to a lobed form of the gourd.



FIG. 118. S. 1-2. CLIFF POTTERY FROM ARI. AND NEW MEX. RUINS.

The animals imitated cover a wide range, including probably a large percentage of the more important creatures of the Mississippi Valley. The manner of applying forms to the vessel is also extremely varied, making a detailed account quite impossible. The degree of realism is far from uniform. In many cases birds, fishes, and quadrupeds are modelled with such fidelity that a particular species is forcibly suggested, but the larger number of the imitations are rude and unsatisfactory. Many forms are grotesque, sometimes intentionally so. In Plate XX are several illustrations of the manner of applying bird forms to the elaboration and embellishment of bowls. Specimens *a* and *b* are from southeastern Missouri. The peculiar form of head seen in *a* is found all over the lower Mississippi and Gulf regions, while the example *c* has the head turned inward, and

resembles a vulture or buzzard. In *d* two heads are attached, both grotesque, but having features suggestive of birds. A finely modelled and finished bird-shaped bottle is shown in *e*. It is finished in red, black, and white, the wings being striped with red and white. The heads in *b* and *f* appear to have human features, but it is not improbable that the conception was of a bird or at the most of a bird-man compound.*

To discuss the pottery of New England, and the Iroquis country, and Canada, would require more space than we can spare. It is much cruder than the specimens we have described. The Iroquois pottery can be distinguished from that of the upper Missouri; the Canadian, from that of the Potomac and Connecticut Valleys. In fact, the pottery of widely separated areas has few common characteristics. But of localities near together, it is not so easy to distinguish the pottery of certain valleys.

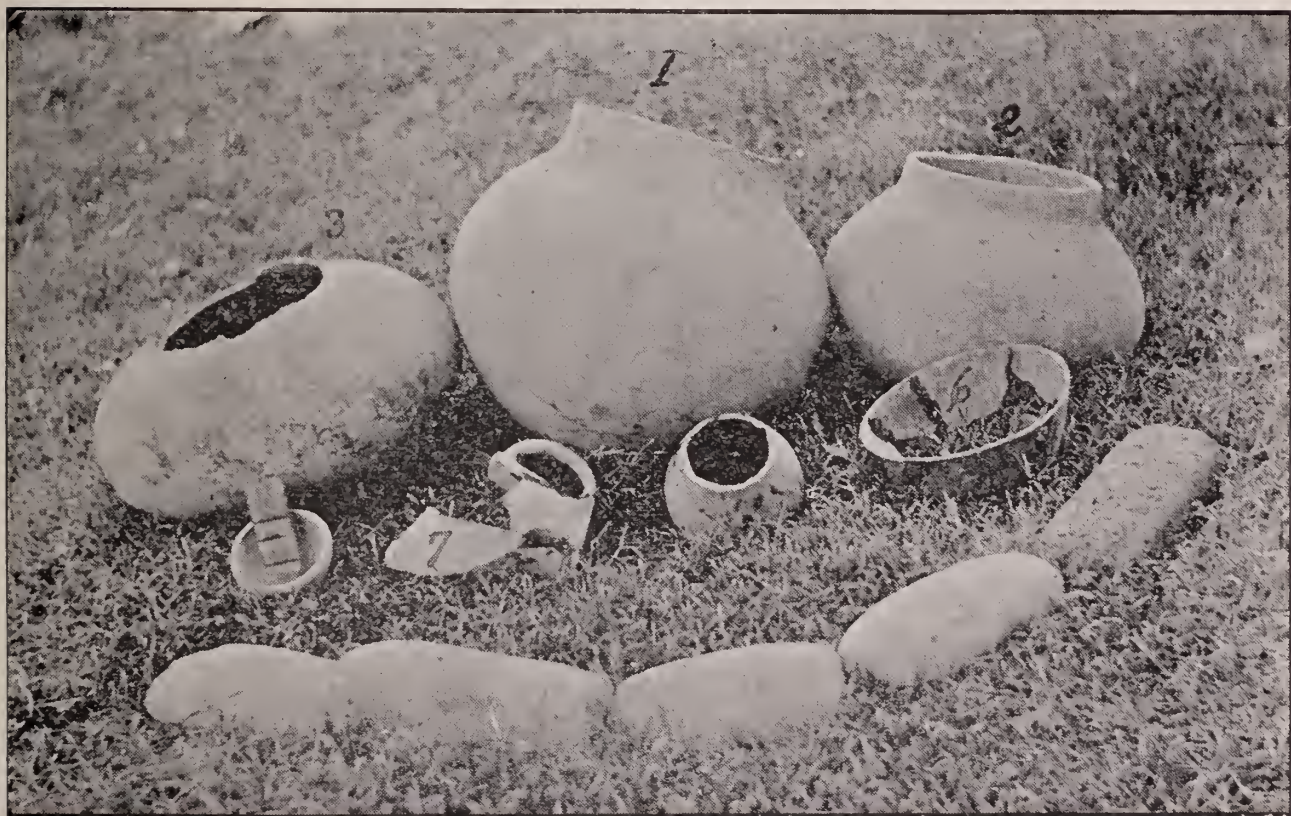


FIG. 119. S. 1-6.

* End of our quotation from Prof. Holmes.

It must not be imagined that Fig. 119 portrays the average south-western pottery. Higher art in the ceramics did prevail there, but plain forms characterize most of the types. In Fig. 119 we have three large ollas and four small dishes from the adobe pueblo ruins near Phoenix, Ariz. In the foreground are mano stones — used for grinding corn on the metates.



FIG. 120. S. 1-2.

BOWL FROM A CLIFF-RUIN IN THE RIO VERDE CANON, ARIZONA.



FIG. 121. S . I-1.

“Form singular, being an accurate copy of a gourd split longitudinally. The pattern consists of parallel lines in two directions at right angles to each other. This arrangement of the lines suggests that the ornamentation is derived from some plaited object.” From Nordenskiöld's plate XXX. From a grave at Step House, South-western Colo.

Chapter XVII

Hematites and Copper Objects

Although widely distributed, but little can be said as to the uses to which objects of hematite were put. An axe, a paint stone, and possibly a celt are readily understood, but what shall we say of the cone, plummet, and oval and egg-shaped forms? MacLean, Foster and others speak of them as fishline or net sinkers; but surely we cannot conceive of their being put to such service. An ordinary notched pebble would serve better and could be more readily replaced if lost. The term plummet is suggested by the form, but it is hardly true that they were used as such. Some one suggested that they were charm stones — carried by the shaman in his medicine sack.

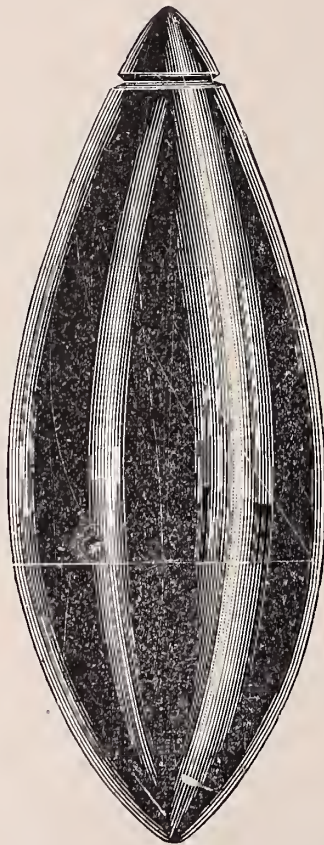


FIG. 122. S. I-I. FINE HEMATITE PLUMMET.
FROM SOUTHERN ILLS.

The first (8717) is a hematite celt, as are the next two. In the centre, three ungrooved oval-shaped objects. To the left, a hematite cup, which is quite unusual.

A very few ornaments — perforated like those of slate — have been found. They are exceedingly rare. Axes, mostly small, are found in Missouri, Arkansas, and Illinois now and then; but they are not a common type. In the Ohio Valley, while cones, egg-shaped, plummet and celt forms occur, there are no axes or ornaments. In the extreme East, West, or South, there are found scarcely any hematites.



FIG. 123. HEMATITE OBJECTS.

Naturally, hematites divide themselves (on form) into eight classes : —

The Celt, for cutting, scraping and smoothing ;

The grooved axe, for hewing and cutting, pounding, etc.

The cone, of which the use is unknown, but probably ceremonial.

The Plummet, the egg-shaped, and the egg-shaped with flattened base, the perforated ornament for suspension ; and softer hematite ores, which were ground and made into paint.

Back on page 77 (Fig. 68) we illustrated a bevelled celt, and the same cut will apply to many hematites. This type is somewhat unusual, and is found in the Ohio and Missouri Valley.

Fig. 122 is a fine plummet, shown full size; a beautiful and graceful relic. No archaeologist can justly classify such a work of art (made of exceedingly hard material) as a mere net sinker. Surface hematite being found in larger fragments in Missouri and Arkansas accounts for the finding there of large grooved axes. They do not occur in other parts of the country, save where brought from a distance, and even such cases are exceedingly unusual.



FIG. 124. S. 1-3.

HEMATITE PLUMMETS FROM THE OHIO VALLEY.

As to the small celts, Mr. Fowke observes:—

“These implements were probably used as knives or scrapers, being set into the end of a piece of antler, which may in turn have been set into a larger handle of wood. That some were knives is shown by the edge, which is dulled to a flat, polished surface, extending from side to side; and that many were scrapers is shown by their celt-scraper shape, a half elliptical section, or by their scraper form edge. Some, however, have the edge symmetrical, as in the hatchet celts.”

Gen. G. P. Thruston says (referring to cones and plummets): "They are too exact in form, and well finished, and most of them are too pointed for practical use as mullers. They also show no evidence of abrasion or grinding at the apices or points. The round top specimens are rare, and show no signs of rubbing.

"Akin, perhaps, to these conoidal forms, are the hematite rectangles or segments. They are made of lustrous hematite, and are among the most beautiful of the specimens of polished ores. Some of them are pierced for hanging, others without holes."

Dr. L. G. Yates, in a paper published in the Smithsonian Report for 1886 (pages 298-305, with four plates) reviews what had been printed up to that date on the plummets. He calls them charm stones. From old Indians he obtained this information:—

"I obtained the words and translation of a song which refers to this subject. The metre and music are Schu-may (or chuma); the words are in the mish-khon-a-ka, or language of the Ventura Indians. It is called su-to-wen-cush.

"Ka-yu-wa-will-le
I am going to tell
Le-le-ni-mu-stu-me-sip-posh
Uneasy my heart;
Su-mus-il. Ka-teush-wen
Charm stone. I have not.
La-li-o-li-o-lwen-neu.
I am sad."

He concluded that the plummets were highly prized and religiously venerated; that to some of the longer ones feathers were tied, and that they were placed in baskets and kept in the house of the shaman.

Copper Objects

As the South is famous for pottery, so is the St. Lawrence renowned for its copper. The ore ledges of the St. Lawrence region contained surface veins of almost pure copper. Hundreds of pits were sunk and mining operations carried on in no insignificant manner. The metal from Lake Superior reached Maine on the east, Kansas to the west, and Florida to the south.* It was more exten-

* "As to Copper from the Mounds of the St. John's River." Clarence B. Moore. *Journal of Academy of Natural Sciences of Philadelphia*, Vol. X, 94.

sively used than mica, galena, or other foreign substances. Sea shells may be expected but even in them the traffic was, according to our own observations, less extensive.



FIG. 125. S. 2-7.

COPPER KNIVES FROM WISCONSIN. H. P. HAMILTON COLLECTION.

This is a very fine group of some thirty-six copper knives.

It is unfortunate that all Mr. Hamilton's "coppers" cannot be shown in this book. He has one of the best collections ever made.

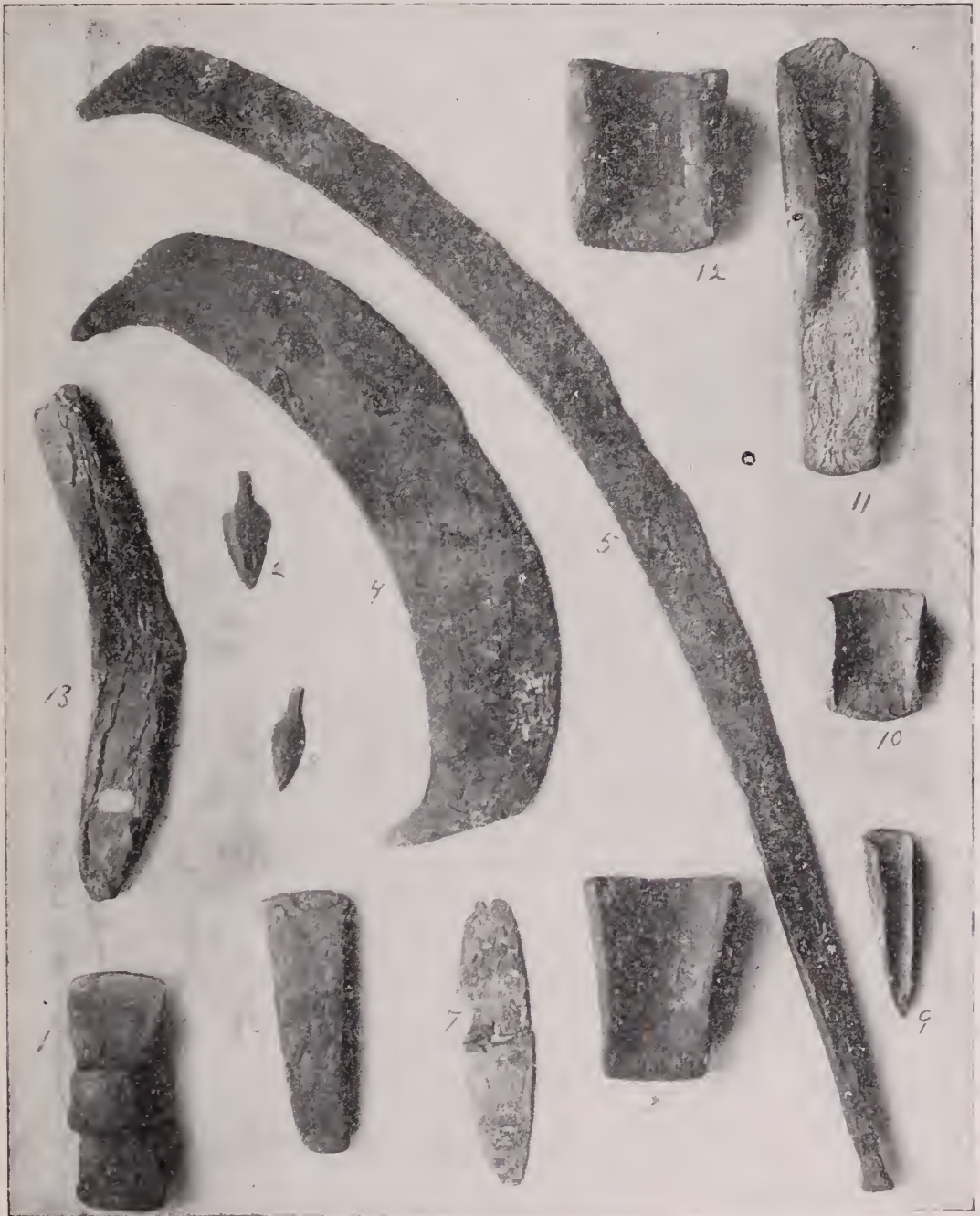


FIG. 126. S. 2-7.

H. P. HAMILTON COLLECTION, WISCONSIN.

Nos. 1 to 7 — Cache of copper implements found at Oconto, Wisconsin. No. 1 is the only specimen of the kind known in copper with one exception and this was also found on the same spot.

Nos. 2 and 3 — Are small copper arrows.

No. 4 — Largest Mr. Hamilton has any record of.

No. 5 — Unusual form of knife or sword.

No. 6 — Chisel with battered head.

No. 7 — Leaf-shaped blade.

Nos. 8, 10 and 12 — Copper spuds.

No. 9 — Small unusual pointed spud or chisel.

No. 11 — Winged chisel.

The authorities are many, but quotations from two must suffice, “Copper, too, in various shapes, was in high favor among them; as aside from its use as ornament and as a mark of authority, it had among certain tribes a sort of religious character or significance. In Wisconsin, for instance, in the heart of the copper-bearing region it was not unusual to find pieces of fifteen or twenty pounds weight that had been preserved in families, from time immemorial, and were venerated as domestic gods; whilst the smaller pieces were looked upon as the possessions of the divinities that lived under the earth and as the playthings of the children.”*

An article of merit by Mr. R. L. Packard was published in the *American Antiquarian* in March, '93. Mr. Packard had investigated pits and says:

“At one point I found a handsome specimen of quartz and copper laid up carefully in a niche. It weighed several pounds. As in other cases, we had proof that the ancient miner did not sink any shafts and do real mining. He was only a surface gleaner.’

“Of the ancient workings on Isle Royale, on the north shore of the lake, which were very extensive and have been described as extending twenty feet and more in the solid rock, Mr. Forster says: “As I understand it, these extensive works were upon a high outcrop, promising natural drainage. And I should infer from what I heard from Mr. A. C. Davis, the agent, and others who opened the Mining mine that the ancient workings were among disturbed shattered rocks, among which were found much mass copper and barrel

* Dress and Ornaments of Certain American Indians. By Lucien Carr. Proceedings of the American Antiquarian Society, April, 1897. P. 66.

work. The ancients were after these pieces of copper. Mr. Davis found many considerable masses, handled and beaten by the ancient men, which were too large for them to carry away."

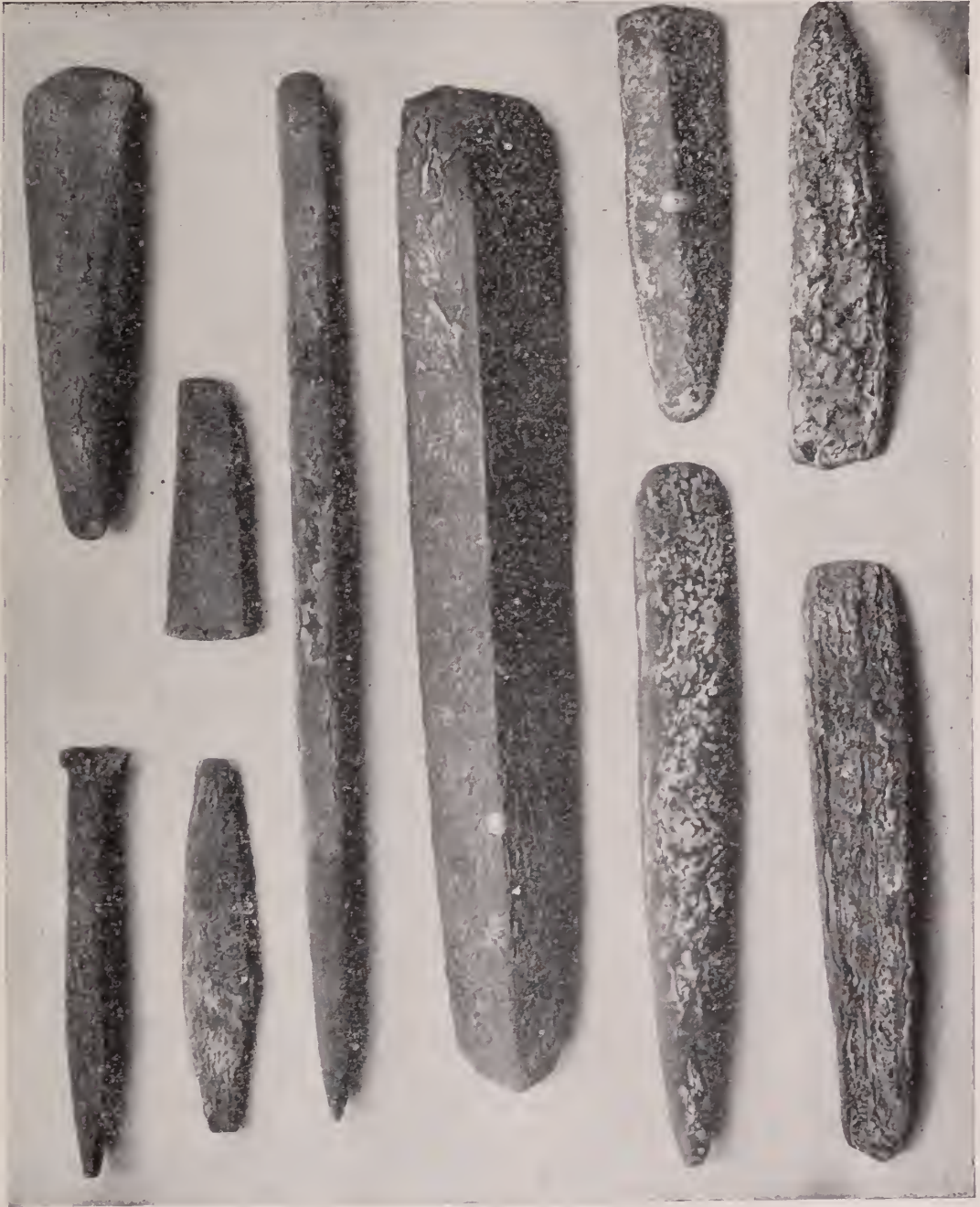


FIG. 127. S. 2-7.

COPPER CHISELS FROM WISCONSIN. H. P. HAMILTON COLLECTION.

Mr. Hamilton says that the middle celt is bevelled evenly from a central ridge in both directions and considers it the finest specimen he has ever seen. It is 14 5-8 inches long and weighs 5 3-4 pounds. The great copper axe found in the Hopewell mound was 22 inches long by about 6 inches wide and weighed nearly 38 pounds.

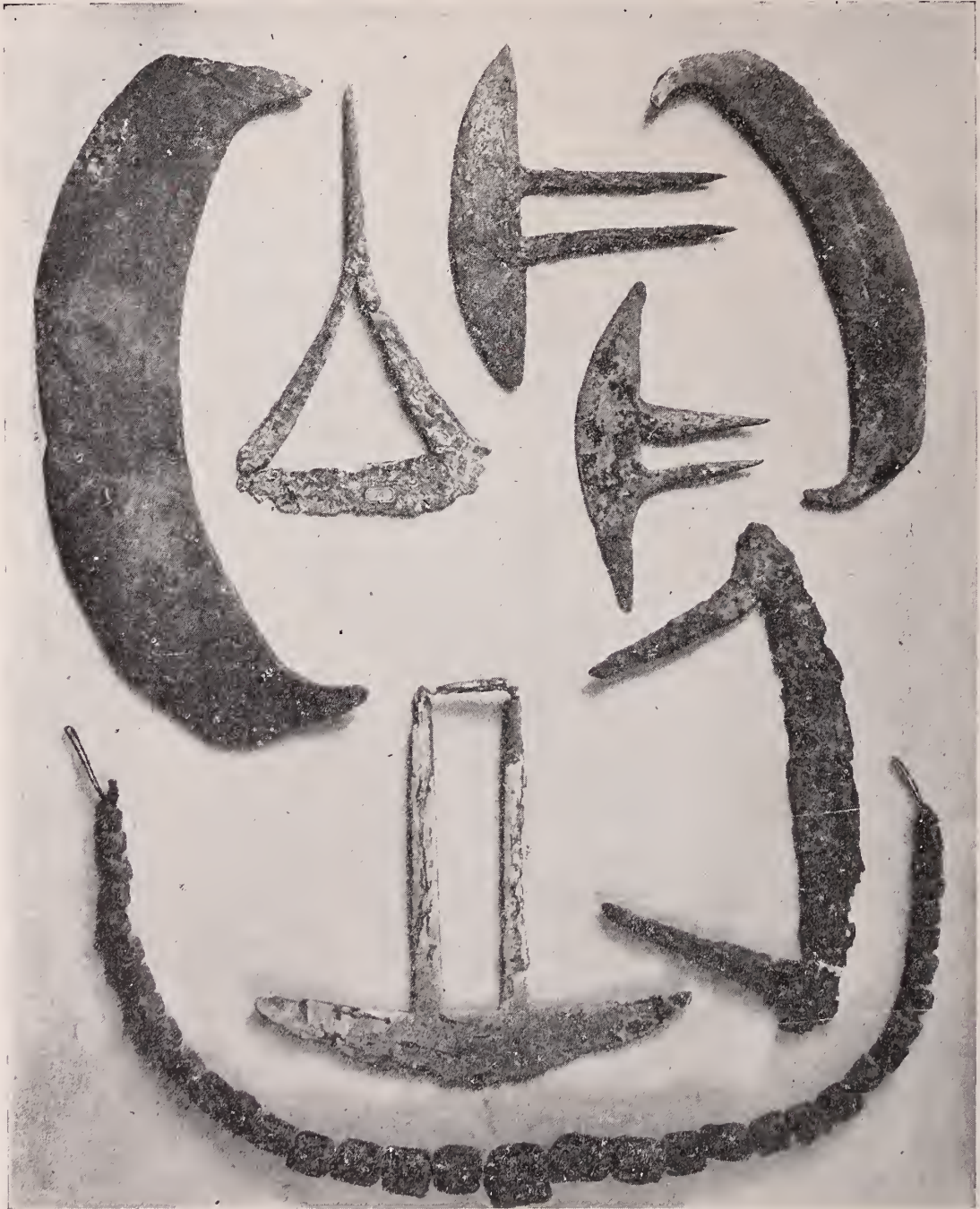


FIG. 128. S. 1-4.
COPPER CRESCENTS, BEADS AND ORNAMENTS.

Several of these appear to be hairpins or head ornaments. We do not know the use of most of them as we have never seen anything exactly like this form. Copper beads, such as are shown in the strand, are found generally through the United States and are not rare. The crescents are occasionally found. The other five objects are quite unique.

This copper was highly prized by the natives and was carried by them down the streams and tributaries of the Mississippi and Ohio and transported even to Florida. Recently two valuable papers entitled "The Native Copper Implements of Wisconsin," by Charles E. Brown, *Wisconsin Archaeologist*, January and April numbers, 1904, have appeared and we advise readers to consult them. When copper reached the regions where the mound building tribes lived, it was not devoted exclusively to ordinary purposes. On the contrary, it was regarded as of more or less ceremonial or religious significance. That is, it was too rare and valuable to be used for such purposes, and so it was fashioned into ear-rings, necklaces, spools, wrist bands, etc. It was cut into swastika crosses, cosmic symbols and other symbolic or religious designs. Great quantities of copper fashioned into these forms have been found by Professor Putnam in the Ohio mounds, by Smithsonian agents in Illinois, and by Mr. Moorehead at the Hopewell group, Ross County, Ohio.

Collectors will do well to visit the American Museum of Natural History, New York; Peabody Museum, Harvard; Field Columbian Museum at Chicago; Milwaukee Public Museum, and the State Museum at Columbus, Ohio, and see these interesting copper specimens. We might remark in passing that we could devote this entire book to copper artifacts alone, and it is both unsatisfactory and regrettable that the subject must be dismissed with so few words. If collectors will read the literature named, they will become well posted on this interesting division of Prehistoric Archaeology.

Fig 129. Most of these are "socket" spears with ribbed backs. The central spear of battered copper and No. 2 are unusual, having rolled sockets. They are quite massive. Mr. Hamilton says that No. 2 is the rarest form of copper spear. Only three or four have been found, just enough to establish the type. No. 2 has parallel lines along both sides of the blade and is very regular and also has peculiar corrugations.



FIG. 129. S. 1-4.

COPPER SPEAR-HEADS, WISCONSIN. H. P. HAMILTON COLLECTION.



FIG. 130. S. I-4.
COLLECTION OF MR. J. W. PECK, MINN.

- No. 1 — Copper spear.
No. 2 — “ “
No. 3 — “ axe.
No. 4 — “ “
No. 5 — Stone pipe (?).

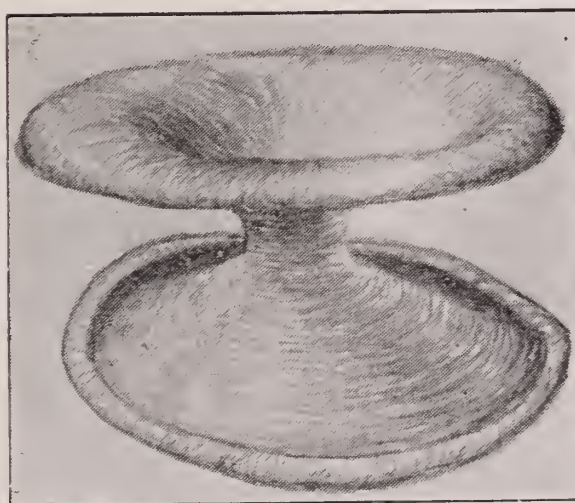


FIG. 131. S. I-1.

Fig 131. This was found in Ill. by Dr. J. F. Snyder, and described by him in the *American Archaeologist*. It is a plain ear or hand ornament, and common in the mounds throughout the Ohio and Upper Mississippi Valleys. It is almost exclusively found in the mounds. Three or four thousand of them were taken out of the altars in the Turner and Hopewell mounds.

This entire pamphlet could be devoted to copper, so exhaustive is the subject. It is with regret that we are enabled to give it no more space.

Chapter XVIII

Unclassified and Unique Specimens

In the beginning of this little work we divided all the implements, ornaments, utensils, etc., into two grand divisions, the Known and the Unknown. By far the greater number of prehistoric objects are embodied in the term Unknown. Field archaeologists and museum curators are hard at work trying to decipher some of the enigmas. It is beyond the scope of this pamphlet to enter into discussion, but it may be well to call attention to a few of these interesting oddities. Fig. 132 presents 11 bird stones, more or less alike, and yet, when studied in detail, they show differences.

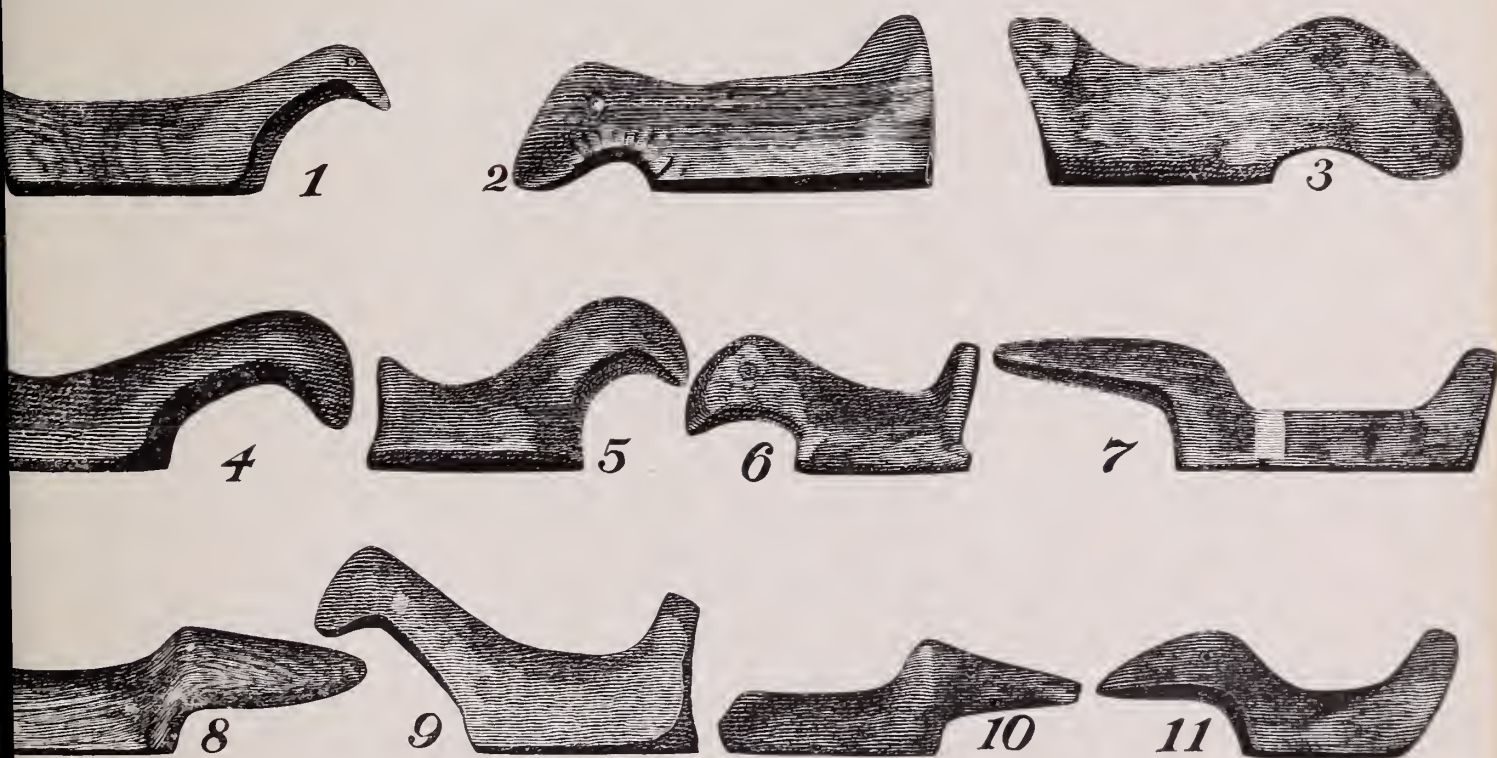
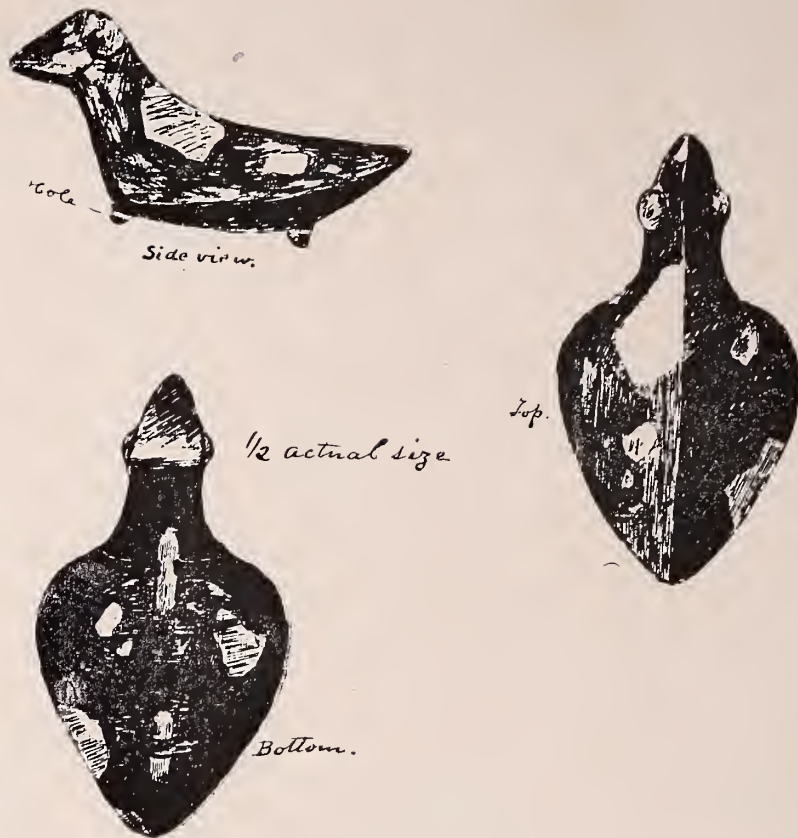


FIG 132. S. 1-3. IND., OHIO, MICH., AND CANADA.



ANOTHER KIND OF BIRD-STONE.

FIG. 133. GREEN PORPHYRY, FOUND NEAR OAK HILL, N. J.

Fig. 133 is yet another of the so-called bird-stones. This singular relic is usually composed of banded slate and shale and is found throughout the Ohio Valley, Eastern Canada, New York State. South of the Ohio River very few of the bird-stones occur. Many theories have been advanced, one of which is that it was worn on the head by young women of marriageable age. The late Prof. Cushing had a theory that bird-stones were mounted on little slate tablets, as each bird-stone has two perforations. The winged bird-stone, such as Fig. 133, are often made in granite and porphyry.

The process of manufacture must needs be long and tedious, and doubtless these things played a prominent part in the ceremonies enacted in pre-Columbian times.

There is another object widespread throughout the United States in the form shown in Fig. 134. It has been called by a very commonplace name — "The Stone Spud".

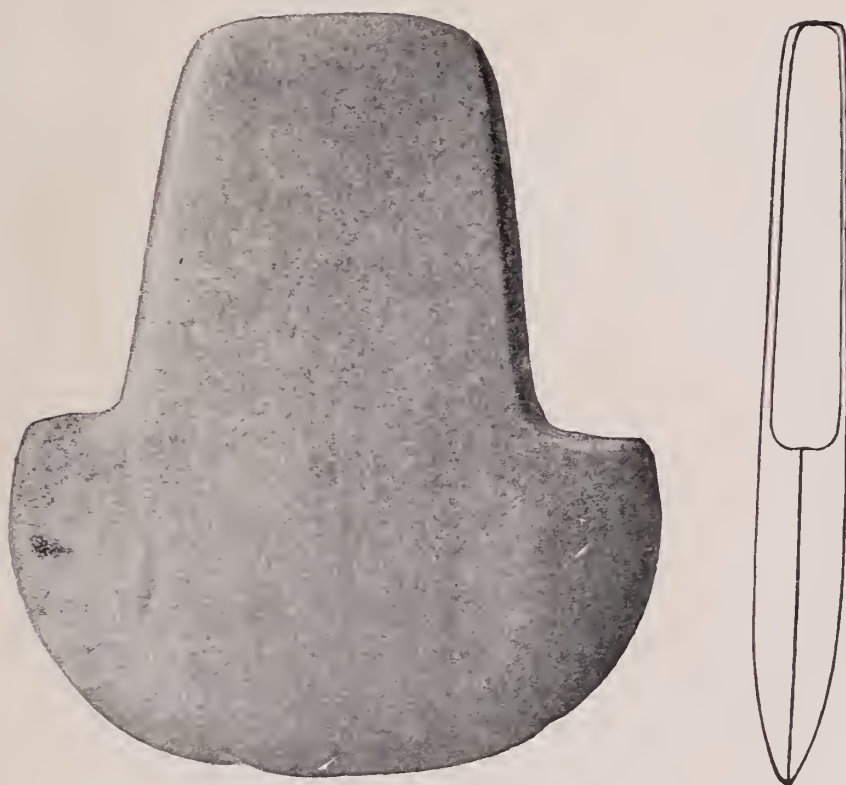


FIG. 134. FROM THE SOUTH.

But Mr. Clarence B. Moore, who illustrates and describes a number of these objects in the *American Anthropologist* for July and September, 1903, calls it "The Hoe-shaped Implement"; a better term. In the *Wisconsin Archaeologist* for October, 1902, Mr. Charles E. Brown divides these hoes or spuds into classes, A, B, and C. Our illustration 134 would come under his class C.

Mr. Moore seems to conclude that these are ceremonial axes. The edges of few of them show wear from use, and they hardly are tools.

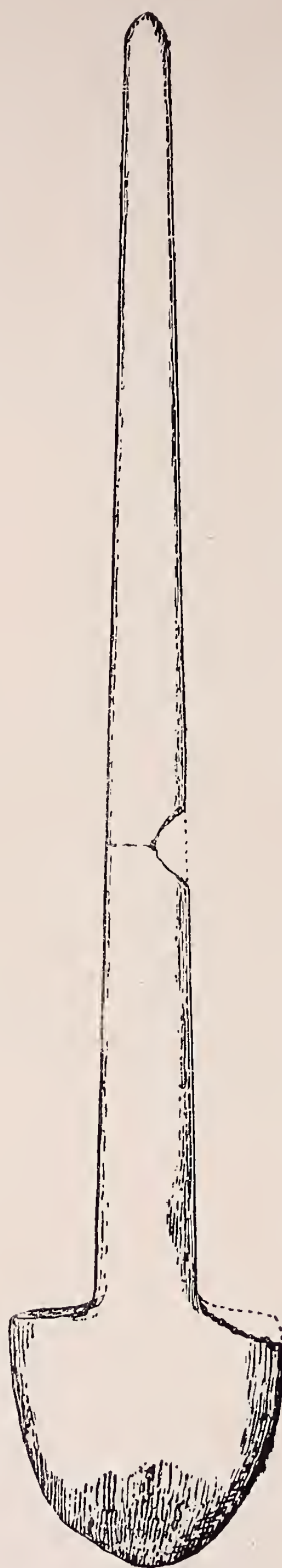


FIG. 135. S. I-2.
TYPICAL "CEREMONIAL HOE" FROM THE SOUTH.

Fig. 136 shows 19 stone objects from the Salado Valley, Southern Arizona. The four fine axes at the top explain themselves. Of the other objects but little can be said. The stone rings, the double rings, and the curious perforated stones on the lower shelf defy attempts to explain the purpose of their manufacture.

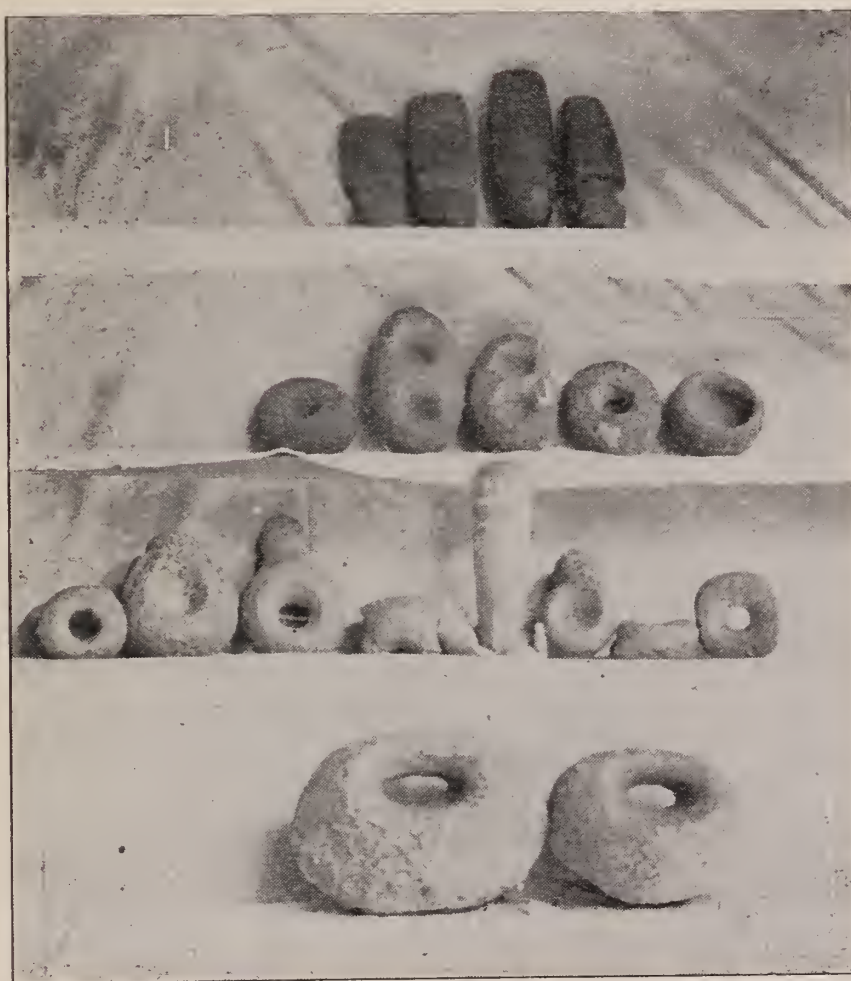


FIG. 136. S. I-9.



FIG. 137. S. 3-4. DARK, BLUISH GREY FLINT.

Found on the banks of the Muskingum river, near Marietta, Ohio, in 1887.

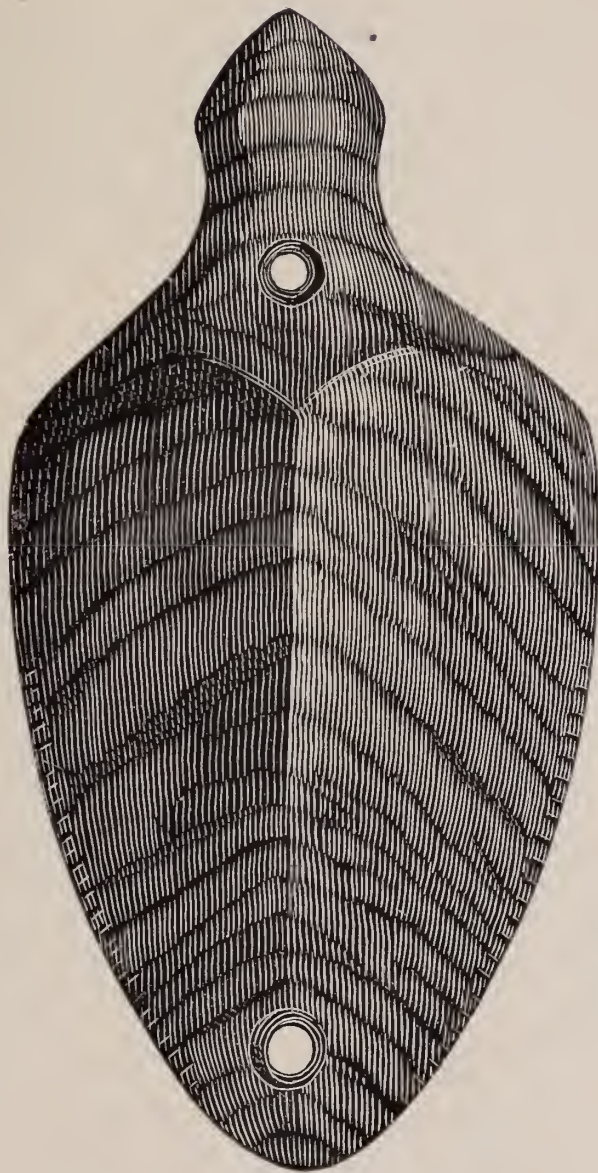


FIG. 138. S. 1-1.

An unknown effigy from northern Indiana. Gruhlke's collection. It is more turtle than bird-shaped.

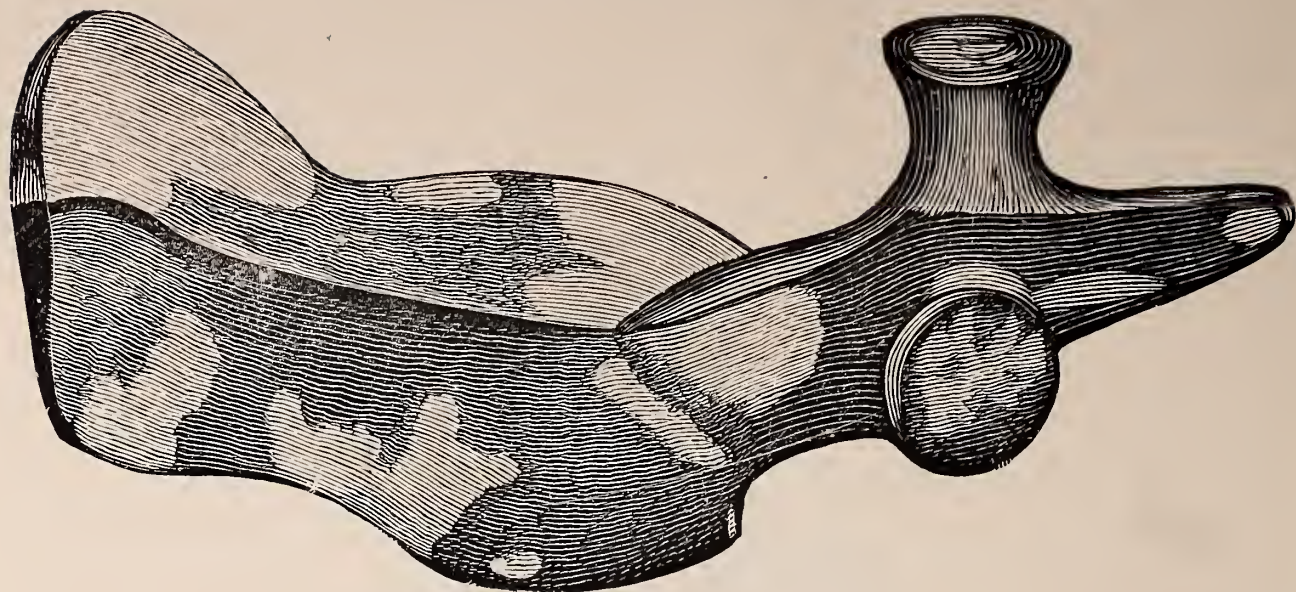


FIG. 139. S. 1-1.

A very curious and fine bird amulet from the Seneca river, N. Y. The ears project to an unusual extent, and the forward perforation is not entirely closed.



FIG. 140. S. 1-1.

A remarkable bird-stone or effigy, to the right of which is an

axe, and to the left a perforated ceremonial. This effigy has no body and is doubtless a connecting link between a general effigy type and the bird or saddle form proper.

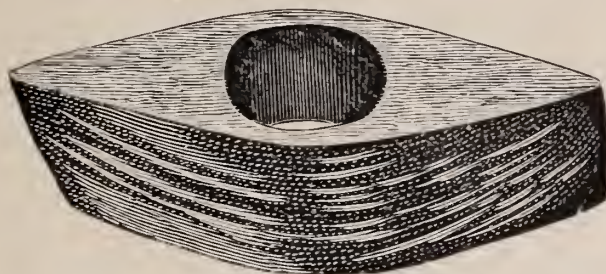


FIG. 141. S. 1-2.

SLATE OBJECT. USE UNKNOWN. MR. HAMILTON'S COLLECTION.



FIG. 142. S., ABOUT 2-3 FOR CRESCENT, AND 1-4 FOR OTHERS.

These four specimens were found in Clark County, Indiana. The collection of Dr. W. F. Work. No. 1 is made of green slate slightly banded, and is very perfect in contour and highly polished. The concaved surface below will fit the forehead or crown.

No. 2 may be a pipe, although by blowing through the large end a loud sound is produced. It is about 4 inches long and 1 1-2 inches in diameter. The hole through the long axis is half an inch wide. It tapers gradually until it is but 1-4 of an inch in diameter at the distal extremity. There is a slight attempt at ornamentation.

Through No. 4 a hole 1-2 inch in diameter and slightly tapering passes.

It will be noted that these several figures show types from widely separated portions of the United States. They emphasize that different tribes used not only the local materials, which were different from local stones in other sections, but that the art conceptions of the one people were totally different from those of another. Thus we do not find the bird-stone in Arizona, nor stone rings in New York State, or the hoe-shaped ceremonials in Washington and Oregon.

A brief mention of the many other kinds of specimens must suffice. There are club-heads, sandal-lasts, fish-hooks, mica ornaments, shell cups, rubbing stones, etc. Speaking of fish-hooks brings to mind the net sinkers; so common east, but rare west of the Alleghanies.

These implements are found on the banks of rivers, large creeks, and lakes where nets were used in taking fish. They are generally flat water-worn stones of different sizes and various forms, tending, however, almost always to the oval in shape. They have notches artificially worked into their sides opposite each other by a few simple blows, and are correctly termed "net sinkers." They vary in weight from an ounce to ten ounces, and once in a while are found weighing from a pound to more than fifteen pounds.* Mr. T. M. M. Gernard, of Muncy, Pa., owns a very fine collection of them and has published some very interesting papers on archaeologic subjects. The frequency of sinkers in this vicinity, says Dr. Rau, † indicates that the Indians were much engaged in fishing at this point (Susquehanna river).

The sinkers found in Pennsylvania are almost exclusively made from the material called graywacke which belongs to the geological

* Mr. Nat. E. Booth, of Southold, Long Island, reports a grooved sinker or anchor from that vicinity weighing fifteen and one-half pounds. It is flat on one side and slightly convex on the other. The groove completely encircles the upper part of the implement. Its shape is similar to a plummet.

† *Prehistoric Fishing*, p. 157-59.

formation whereon is situated Muncy. The longest specimen shown by Dr. Rau is a flat stone of irregular outline, eight inches wide across the broadest part, and one and three-eighths inches thick in the middle. It weighs two pounds and fourteen ounces. It may have served for weighing a set-net. From this region have been taken many sinkers weighing from one-half ounce upward. These small and light specimens were no doubt used in connection with hook and line.



FIG. 143. S. I-I.

This was found on a village site 1-2 mile from Lowell, Ohio. Material, greenish-gray, banded slate.

This ceremonial is very rare. It has a slight groove at the top and a transverse groove about an inch below. The perpendicular groove intersects the horizontal one.

The edge is sharp and gracefully rounded. The stone is beautifully banded or seamed and shows various shades of green and gray. It is brought to the highest perfection of finish or polish.

Why was such an object made? For what purpose was it used? The word "ceremonial" carries no significance and does not explain away the mystery. Here is another opportunity for the archaeological wisemen of our great museums!



FIG. 144. S. 1-2.

Fig. 144. A bar amulet from Waterloo County, Ontario. More of these are found in New York and Ohio than elsewhere. They vary from a straight bar to the bird-stone ceremonial form.

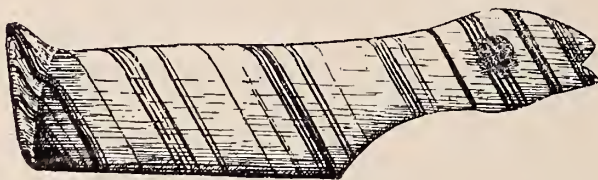


FIG. 145. S. 1-2.

Fig. 145. Bird-stone ceremonial from Oxford County, Ontario. A very beautiful specimen of banded slate. Supposed to have been worn on the head.

In conclusion there remains to be added a few words of advice to collectors. As to the detection of counterfeit relics, there is no hard and fast law or rule. In case of doubt, visit the nearest museum or seek out a more experienced student of archaeology than yourself, and show him the specimen. The form can be counter-

feited, but that which cannot be explained — the looks, or the appearance or genuineness — defies the counterfeiter. A genuine specimen looks old, it is covered with patina, etc. A fraud never looks old.



FIG. 146. S. I-I

Frauds. Made by re-chipping spear-heads or knives. These were obtained near Flag Pond, Va. Collectors should never purchase or exchange for specimens of this sort.

Archaeological cabinets should be made for study or as a pastime. For any other purpose, collections should not be made.

For the local student who collects for his own pleasure, we should have nothing but commendation, for at some future date his cabinet may be preserved. His expenditures, his trips to favorite localities that he may personally roam over freshly ploughed fields, his hours spent in arranging his cabinet during winter evenings are labors born of love. He knows his region and takes satisfaction in that knowledge. He places no fictitious value on his cabinet. That there is no such a thing as an arbitrary value on a pipe, tube or jar he is aware. He wishes to have his cabinet preserved, not scattered, and when he dies, it will be of real value to future generations.

Not so the commercial collector. When out "exploring" this person cares not for the attractiveness of his surroundings. Neither the songs of the birds nor the freshness of advancing spring appeal to him. If he be out in August he heeds not the broad acres heavy with fragrant clover. Nature is nothing to such a person. He is bad enough, but the man who demolishes mounds or cliff houses in order that he may sell the specimens found therein is worse. The latter is too lazy to work, and ekes out a miserable existence by selling the "relics" of a vanished people to such as may buy.

The specimens are gradually drifting to the permanent museums. Every year sees new museums founded. Each season an increasing proportion of archaeological cabinets finds its way into permanent quarters in fire-proof buildings, and there these things can be studied and protected. The collector, who faithfully preserves with correct data the material discovered in his neighborhood, enjoys through many years his archaeologic pursuits, and when he is through with his collection presents it to a worthy institution, renders science a service and perpetuates his own name.

Bibliography

ABORIGINAL CHIPPED STONE IMPLEMENTS OF NEW YORK. William M. Beauchamp. 1897.

ABORIGINAL OCCUPATION OF NEW YORK. W. M. Beauchamp. 1900.

AMERICAN ARCHAEOLOGY, INTRODUCTION TO THE STUDY OF. Prof. Cyrus Thomas. 1899.

ANTIQUITIES OF TENNESSEE. Gen. G. P. Thurston. 1896.

ANTIQUITIES OF THE SOUTHERN INDIANS. C. C. Jones.

ANCIENT MONUMENTS, MISSISSIPPI VALLEY, Smithsonian Institution, Washington. 1847.

ARCHAEOLOGY OF LYTTON, B. C. Harlan I. Smith. 1899.

ARCHAEOLOGICAL REPORTS OF THE MINISTER OF EDUCATION, (Ontario). David Boyle. 1894 to the present.

ARCHAEOLOGICAL HISTORY OF OHIO. Gerard Fowke. Columbus. 1903.

BIRD-STONE CEREMONIALS, The. W. K. Moorehead.

BURIAL CUSTOMS OF THE HURONS; Bureau of Ethnology Report. '83-'84.

CHARM STONES (so-called "Plummets" or "Sinkers"). Lorenzo G. Yates, Santa Barbara. 1890.

CLIFF-DWELLERS OF THE MESA VERDE, COLORADO. G. Nordenskiöld, Stockholm. 1892.

EARTHERNWARE OF THE NEW YORK ABORIGINES. W. M. Beauchamp, 1898.

GERM OF SHORELAND POTTERY. F. H. Cushing. Report of Congress of Anthropology. '93.

HORN AND BONE IMPLEMENTS. W. M. Beauchamp. 1902.

HISTORY OF VIRGINIA, The. In four parts. London. 1872.

INDIAN TRIBES OF THE UNITED STATES. H. R. Schoolcraft. Washington. 1847.

METHODS OF MANUFACTURE OF THE OLLAS, MORTARS AND PIPES.
Paul Schumacher, Eleventh Annual Report, Peabody Museum.

MOUND EXPLORATIONS IN FLORIDA, Various Reports on, by Mr. C. B. Moore.

NATIVE RACES OF THE PACIFIC STATES. H. H. Bancroft.

NORTH AMERICAN INDIANS. George Catlin.

NORTH PACIFIC EXPEDITION. American Museum Natural History.

OUR WILD INDIANS. Col. R. I. Dodge.

PICTURE WRITING OF THE AMERICAN INDIANS. Garrick Mallery.
Bureau of Ethnology Report. 1888-1889.

PIPES AND SMOKING CUSTOMS. Joseph D. McGuire. Smithsonian Report. 1897.

POLISHED STONE ARTICLES USED BY THE NEW YORK ABORIGINES.
William M. Beauchamp.

PREHISTORIC ART; OR THE ORIGIN OF ART AS MANIFESTED IN THE
WORKS OF PREHISTORIC MAN. Thomas Wilson. Smithsonian Report. 1896.

PREHISTORIC MAN IN CALIFORNIA. Lorenzo G. Yates. Santa Barbara, Cal. 1887.

PREHISTORIC TEXTILE ART OF THE EASTERN UNITED STATES. ANCIENT POTTERY OF THE MISSISSIPPI VALLEY, ALSO ART IN SHELL. Prof. W. H. Holmes. Bureau of Ethnology Reports. 1891-2; 1892-3.

PREHISTORIC IMPLEMENTS. W. K. Moorehead.

PRIMITIVE INDUSTRY. Dr. C. C. Abbott.

QUIVIRA, by Hon. J. B. Brower, St. Paul, 1898. HARAHEY, by the same author, St. Paul, 1899. Both under the general title; MEMOIRS OF EXPLORATION IN THE BASIN OF THE MISSISSIPPI.

REPORTS OF PEABODY MUSEUM.

- " " SMITHSONIAN INSTITUTION.
- " " BUREAU OF AMERICAN ETHNOLOGY.
- " " OHIO STATE ARCHAEOLOGICAL AND HISTORICAL SOCIETY.

STONE ART. Gerard Fowke. Bureau of Ethnology Report. 1890-91.

STONE AGE, THE, W. K. Moorehead (in preparation)

WAMPUM AND SHELL ARTICLES. W. M. Beauchamp. 1901.

And complete files of:—

| | |
|------------------------------|----------------------|
| AMERICAN ANTHROPOLOGIST, The | 1897 to the present. |
| AMERICAN ANTIQUARIAN, The | 1876 " " " |
| ARCHAEOLOGIST, The | 1893 to 1896. |
| AMERICAN ARCHAEOLOGIST, The | 1897 to 1899 |
| RECORDS OF THE PAST | 1900 to the present. |
| WISCONSIN ARCHAEOLOGIST, The | 1901 " " " |



